

Pathology of E-commerce with an Approach to Information Technology

(A Case Study: Knauf Iran Company)

Abbas Toloie- Eshlaghy (Corresponding author)

Industrial management department, Science and Research Branch, Islamic Azad University, Tehran, Iran

Tel: 98-912-310-8756 E-mail: toloie@gmail.com

Alireza Poorebrahimi

Assistant professor, Management Department, E-campus, Islamic Azad University, Tehran, Iran

E-mail: poorebrahimi@gmail.com

Azam Farmanara

Student, Management Department, E-campus, Islamic Azad University, Tehran, Iran

E-mail: azamfarmanara@yahoo.com

Received: April 13, 2011

Accepted: April 26, 2011

doi:10.5539/cis.v4n3p184

Abstract

E-commerce is among functions which have been promoted by modern communication technologies. The progressive trend of e-commerce has created new opportunities in the field of trade and commerce. Taking advantage of this method of trading in national and international levels require providing infrastructures without which e-commerce will be hindered and conducting commercial transactions will not be fully possible.

The present article aims to do pathology on e-commerce with an approach to information technology in Knauf Iran Company. At first, researches which have been carried out in Iran and other countries were studied and different criteria and indices of e-commerce were drawn. Then, a conceptual pattern was developed after categorizing the criteria. Thereafter, effects of indices on each other were assessed to prioritize effects of elements on e-commerce and finally results were analyzed using the DEMATEL technique. The institutional-organizational management index was placed in the highest priority and the expert and educated manpower index was placed in the lowest priority.

Keywords: Pathology of e-commerce, Information technology, DEMATEL

1. Introduction

Considering advantages of e-commerce and due to the fact that this kind of commerce is regarded as a key competitive advantage for countries and societies and paying attention that Iran is a young countries in this kind of trade, so carrying out pathology of e-commerce in the field of information technology seems to be reasonable. As digital gap can be an inalienable advantage for developed nations, it can be considered as a major danger for others. In such a situation, it seems that the only solution would be equipping with knowledge and powerful tool of the current era and entering knowingly, as soon as possible, in very important processes, such as electronic commerce.

This phenomenon can be as effective on economies of developed countries as it can be useful for countries which are not benefited from many advantages of the developed nations. Internet, as a powerful, fast and reliable tool in data exchange, plays a key role in economic, social, political and cultural developments in societies (Asia Insurance quarterly, No. 28). The development of information technology and communications in recent two decades and expansion of its applications in different economic and social fields have opened a new chapter in relations among people, entities, companies and governments.

New concepts are being emerged in economy and trade arenas. Traditional methods of trading and business are being revised and in this line, new professions and economic activities are being introduced (Iranian e-commerce feasibility project, 2004).

In an article titled "Indigenizing e-commerce and business in Iran" by Fereidooni (2007), the only way to promote e-commerce in Iran has been referred to as indigenizing and using modern and special methods as well as not imitating developed nations considering limitations and specific political and economic situation in the country. Qasemzadeh and Sahhafi (2003) have conducted a research on "developing a model for promoting e-commerce in the Airline of the Islamic Republic of Iran (HOMA)". They combined two proposed models of the United Nations, named Mirza and Dingra, to promote e-commerce and developed a new two-dimension model which includes phases from the emergence of e-commerce to the continues and unfettered transaction. Esfidani and Kermani (2004) in an article titled "studying effects of competitive factors on globalization and e-commerce" emphasized on the need for information technology and globalization and then concluded through studying activity of value chain that information technology and e-commerce play a great part in downsizing supply chain and competitiveness of enterprises.

Feyz Chekab (2003) in an article titled "legal and juridical status of e-commerce in Iran and in the world" have referred to comprehensive and inclusive laws as among the main requirements for launching e-commerce in Iran and has offered a set of regulations for Iran through comparing with laws in other countries (Jamshidi, 2007). Mohammadi (2002) in a research under the title of "outlining strategic function of e-commerce based on five competitive porter forces" has briefly reviewed the status of internet in viewpoint of strategic management and studied the electronic trading market and also has delineated commercial relations in the field of e-commerce in Iran's mineral industries and has offered possible approaches for effective utilization of e-commerce in the ministry of industries and mines and proposed suggestions to mineral exporters for training specialized manpower.

Qoreishinejad has carried out a study on "Approaches to promote e-commerce in the country". He has studied prerequisites and infrastructures for launching e-commerce and then has conducted a research using the SWOT analyzing method on internal and external factors. It was concluded that moving toward e-commerce is inevitable and any delay in this regard will impose irrecoverable costs. In this project, some approaches for expanding e-commerce and boosting infrastructures and promoting applications have been offered. Mofakham has studied the design and implementation of an electronic check system in Iran. She has concluded that developing electronic payment systems is a must for entering Iran into the global e-commerce arena. Considering that checks are widely used traditionally in Iran and the low costs of paying checks electronically due to benefiting from electronic transaction instead of traditional methods, paying checks electronically using legal binding background of checks for payment is put forwarded as a substitute for paper checks in electronic transactions (Nasiri Mofakham, 2003).

Pirsaheb has reviewed the use of e-commerce in Iran benefiting from the SWOT model. In this article, it has been tried to analyze advantages and disadvantages of applying e-commerce using the SWOT model and specify its weak and strong points and take a suitable approach accordingly. The research has been conducted using the Delphi method and its target society covers e-commerce experts and specialists in universities, the ministry of commerce, and companies across the city of Tehran.

The most important statistical method which has been used in the study is the matrix of opportunities, threats as well as weak and strong points which have been extracted through prioritizing implementable factors and strategies.

Results of the study have been offered in the frame of SO, ST, WO, and WT strategies. Boosting investments, training specialized manpower, attracting foreign investment, utilizing country's good geopolitical situation, establishing electronic stores, and membership in international formations toward increasing sales, job creation, economic development, preparing appropriate strategic for IT industry, and taking the lead in establishing e-commerce by the government are among the results (Pirsaheb, 2003).

Jamshidi in the fourth national conference on e-commerce in 2007 presented an article titled "e-commerce and the need to indigenize it". He referred to indigenizing and localizing e-commerce considering all limitations, facilities and domestic needs as the only way to promote e-commerce in the country. This is the most important issue to realize a sustainable e-commerce in Iran. But, unfortunately it has been completely ignored both in trade and in scientific and educational sector, he said (Jamshidi, 2007).

Ramlah and Nor Shahriza (2007) from the Malaysia Islamic University in an article titled "critical factors in establishing e-government in Malaysia" studied necessities to establish e-government and after prioritizing the

factors, paid special attention to the information technology and financial resources as the most important factors required for establishing e-government. Osaka and Chemi (2006) in studying “promotion of e-commerce in developing nations” have emphasized on explicit difference of such countries with developed nations and have referred to behavioral and cultural backgrounds of people as very important in accepting and promoting e-commerce.

Gerry and Dass (2005) in an article titled “a model for successful e-commerce” have studied motivating and hindering factors both in internal and external views and then using the Likert method, they prepared a questionnaire and sent to a large number of Australian companies to gather their viewpoints on the motivating and hindering factors and proposed a model to boost the motivating factors and remove the hindering factors toward promoting e-commerce in the companies. Brix from Britain’s Southampton University and Zineddin from Malaysia’s Sciences University (2005) in a joint research titled “participating and outsourcing information technology” in Malaysia have referred to the rapid growth of e-commerce and information technology in this country and stated that participation of foreign companies was the major reason for the rapid growth (Jamshidi, 2007).

(Insert table 1 here)

Considering that the research is about Knauf Iran Company, we introduce the company hereunder. Knauf Iran Company is one of the world’s largest manufacturers of drywall construction systems. The company was established in 1932 in Germany. With over 150 factories in 37 countries and 18000 employees, Knauf is active as a great industrial group around the world. The company is one of the ten top foreign investors in Iran. Knauf made its first investment in Iran in 1993 through buying and rebuilding Iran Plaster Company (ex-Wall Board).

2. Research Methodology

As it was mentioned earlier, the present article aims to carry out pathology on e-commerce with an approach toward information technology. To this end, a number of expert and specialized persons were selected to answer questions after studying the issue and reviewing its background to attain necessary information. The answers have been analyzed using the DEMATEL technique. Considering the background and carried out studies, 15 indices and elements of e-commerce were selected and listed as shown in Table 2.

(Insert table 2 here)

Then, mentioned elements and factors were placed in a diagram and their relations were depicted.

(Insert Figure1 here)

To study effect of the indices and factors on e-commerce, a questionnaire was prepared with the aim of defining effects of the indices on each other. Considering that the questionnaire was prepared in a way that it could study effect of each index on other indices and factors (effect of an index on 14 other indices), the number of questions was high and so the questions were asked in the form of interviews from 10 experts and they were wanted to evaluate effects of e-commerce indices on each other as giving scores from 0 to 100. Then, the average of scores was calculated based on the DEMATEL technique and was included in a matrix as below.

(Insert table 3 here)

Considering that the case study is related to Knauf Iran Company, five experts who were interviewed were among managers and staff of the company’s information technology department. They have computer or IT certificates and five years of working experience in the company. Now, to have access to the possible structure from direct and indirect relations, the order of location of elements and e-commerce factors in terms of affecting other factors or being affected, the Table 4 matrix is reviewed.

(Insert table 4 here)

Considering the table 4, the maximum row sum(R) shows elements which are highly influential over other elements. The B factor (human resource), the highest column sum (J), show order of elements which are influenced. The D index (Development in administrative entities related to e-commerce, such as electronic training, electronic health, electronic safety and electronic municipality) receives the highest effect from other factors and e-commerce prerequisites. The J index receives the least effect from e-commerce elements, so the order of elements from R column show the order of influential factors and the order of elements from J column shows the order of influenced factors.

The real location of each element in the final hierarchy is specified by (R-J) and (R+J) columns. The location, if (R-J) is positive, will be an influential and if is negative will be a receiver. The (R+J) shows intensity of an element both in terms of being influenced and influential. The highest (R-J) is related to I element (Entity

infrastructures-managerial organization) which is the most influential index over e-commerce. So, it can be said that the B index (human resource) is the lowest influential element over e-commerce. Considering (R+J) column data it can be said that I index has the highest priority on the system and is lower than the D index, which is in the third priority.

3. Conclusion

Results of the study show that the below factors have the first to the fifteenth priorities in establishing e-commerce. Entity infrastructures-managerial organization, Supportive entities, Development in administrative entities related to e-commerce, such as electronic training, electronic health, electronic safety and electronic municipality, Banking and credit infrastructures, Organizational factors such as organizational leadership and management, organizational culture, Educational infrastructures, human resources (skilled and educated staff). Managers and members of the board of directors of the company do agree with e-commerce completely and support related activities. Information technology department is supported by the company's managers for online sales. But, considering that software packages which are used by Iranian companies are not web-based, there is no possibility for giving online orders by customers and linking with software database management. Therefore, customers of the company cannot place online orders for the time being.

References

- Asgharpour. MJ. (2003). *Group decision making and game theory with the attitude of Operations Research*. Tehran University Press. First Edition.
- Abtahi. S .E. (1997). *structured text logy information highways in Persian language*. Tehran. Publications of ministry of Agriculture. Department of Statistics and Information.
- Bajaj, K. K. and Dyjany Nag. (1997). *the exchange of electronic information to electronic commerce*. translated by Mojtahedi B. Tehran, Press Institute of Business Studies and Research.
- Bolurian Tehrani, M. (1997). *Marketing and market management*. the publishing business. First Edition.
- Hartman .B .and Flinn.D. (2003). *Mastering Web Service Security*. Wiley Publishing Inc.
- Clark. R. (2004). *Electronic commerce definitions*.
- Department of Economic Planning. (2003). *Consultative e-commerce*.
- Etslander. P. (1992). *Experimental methods for social research*. Astan Qods Razavi Cultural Department. First Edition.
- Ezzati. M. (1997). *Research in Social Science. Economic Research Institute*. Tarbiat Modarres University. First Edition.
- Farid. H and Hashamy. AR. (2000). *familiar with the concepts of electronic commerce. International Conference on Electronic and Internet cities*. Tehran. Electronic Publishing Institute of Science and Technology and Deputy Project planning and development office and the Ministry of Culture and Islamic Guidance.
- Fathi. S. (2004). *e-commerce concepts and applications*. Information Technology Research and Statistics Department of Commerce. Business Studies and Research Institute of Publishing. First Edition.
- Fathian. M. and Mahdavi Nour. H. (2008). *fundamental and management for information management*.Iran University of Science and Technology. Fifth Edition.
- Gay.L.R-Diehl.L.P. (1992). *Research Methods for Business and Management*. Maxwell Macmillian International Editions.
- Hafez Nia.MR. (1998). *Introduction to Research Methods in Human Sciences*. Tehran, SAMT publisher.
- Hokey Min & Gengui Zhou. (2002). *Supply Chain Modeling: Past, Present and Future*. Computers & Industrial Engineering .43,ppt.231-249
- Ives,S. (1997). *Distribution and pricing. Network*, McGrow Hill .
- Kardaras.D. and Eleutherlos Papathanass lou. (2001). *Electronic commerce opportunities for improving corporate customer support in banking in Greece. International journal of bank marketing*. Vol.19, No.7, Dec,P.292-298.
- Keith. A. Holmes, R. (1998). *Introduction to Information Technology*. translated by Azarakhsh.M and Mehrdad. J. M. SAMT publishing, first edition.

- Khaki. GH. (1999). An approach to research methods dissertation writing. Tehran, in cooperation with the State Scientific Research Center Cultural Center and DERAYAT publications.
- Khaki. GH. (2001). *Manual for research design*. Tehran, Islamic Azad University Scientific Publication Center.
- Kosiure, D. (1997). *Understanding electronic commerce*. Microsoft press. Washington.
- Leary, Mark R. (1995). *Behavioral Research /methods*. cole Publishing Company.
- Miller . D (1996). *the strategic challenges of EC*. [Online] Available at www.enix.co.uk.
- Sanayee. A. (2000). *e-commerce in the Third Millennium*. Jahad Daneshgahy. Isfahan Unit Publishing. third Edition.
- Sanayee. A. (2000). *Marketing and Electronic Commerce*. Jahad Daneshgahy. Isfahan Unit Publishing. third Edition.
- Sanjiv Purba. (2002). *Architectures for E-Business Systems*. Aurebach Publication.
- Turban , E and Lee, j, King D.& Chung , H.M. (2000). *Electronic Commerce: A managerial perspective*. New Jersey. Printice Hall.
- Zamani. Q and Bahramloo, M. (2004). *Application of Internet in law*. MIZAN publications. First Edition.
- Zwass, Velademir. (2002). Structure and macro level impact of electronic commerce from technical infrastructure to electronic market place. [Online] Available at: www.sagepub.com/printfriendly.aspx?pid=4635&ptypeB.

Table 1. General obstacles facing e-commerce worldwide

No.	Obstacle	Rank
1	Security and cryptography	1
2	Reliability and risk	2
3	Shortage of specialized manpower	3
4	Shortage of appropriate trade patterns	4
5	Culture	5
6	Identifying user and shortage of general infrastructures	6
7	Organization	7
8	Fraud and failure risk	8
9	Low speed internet and network	9
10	Legal affairs	10

Table 2. Indices gained from collected data

No.	Index
A	Technical, telecommunication and linking infrastructures necessary to develop e-commerce
B	Necessary manpower infrastructure
C	Necessary legal and juridical infrastructures (e-commerce law, e-signature law)
D	Development in administrative entities related to e-commerce, such as electronic training, electronic health, electronic safety and electronic municipality
E	Banking and credit infrastructures (expanding computer-based networks to link banks to each other, creating virtual banks, promoting use of credit cards, establishing finance and credit institutions to conduct financial operations on the internet)
F	Providing encoding and decoding facilities to conduct secure transactions on the internet
G	Launching a standardized system for allocating trade codes to products
H	Accepting electronic documents by the judiciary department valid as equal as paper documents
I	Entity infrastructures-managerial organization (an organization which runs e-commerce and managers accept using e-commerce, information technology and communications in different organizational sections)
J	Educational infrastructures (training people as end users of products and officials and managers to offer the services to people)
K	Organizational factors such as organizational leadership and management, organizational culture (flexibility of organization, size of organization), organizational structure, size of organization
L	Supportive entities (developing public technologies such as communications, software engineering and required technical knowledge to support e-commerce)
M	Cultural infrastructures
N	Revamping production and distribution systems and changing management from traditional to modern systems
O	Developing rapid goods transportation companies

Table 3. Preliminary table resulted from direct relations among indices

		Technical and communication	Human resource	Legal and juridical	Development in administrative entities	Banking and credit	Encoding and decoding facilities	Standardized system for allocating trade codes	Accepting electronic documents	Entity infrastructures-managerial organization	Educational infrastructures	Organizational factors such as organizational leadership and management	Supportive entities	Cultural infrastructures	Revamping production and distribution systems	Developing rapid goods transportation companies
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Technical and communication	A	0	62.5	60	92.5	82.5	85	57.5	82.5	90	60	32.5	80	87.5	17.5	15
Human resource	B	80	0	60	85	82.5	90	50	50	60	85	95	85	85	70	55
Legal and juridical	C	70		0												40
Development in administrative entities	D	80			0											77.5
Banking and credit	E	80				0										27.5
Encoding and decoding facilities	F	70					0									30
Standardized system for allocating trade codes	G	55						0								75
Accepting electronic documents	H	60							0							77.5
Entity infrastructures-managerial organization	I	22.5								0						80
Educational infrastructures	J	52.5									0					80
Organizational factors such as organizational leadership and management	K	50										0				50
Supportive entities	L	50											0			60
Cultural infrastructures	M	37.5												0		47.5
Revamping production and distribution systems	N	70	85	37.5	60	75	75	50	82.5	50	40	80	80	52.5	0	60
Developing rapid goods transportation companies	O	62.5	70	52.5	67.5	60	55	85	25	47.5	25	62.5	30	42.5	55	0

Table 4. Final table of relations among indices

Order of indices	Maximum row sum of R	Order of indices	Maximum column sum of J	Order of indices	Based on R+J	Order of indices	Based on R-J	
B	5.355	D	5.213	D	10.042	I	1.162	Influential element
D	4.830	I	4.926	B	9.610	L	0.703	Influential element
A	4.717	L	4.667	A	9.168	D	0.383	Influential element
N	4.711	E	4.648	H	9.028	E	0.361	Influential element
H	4.609	K	4.589	E	8.935	K	0.270	Influential element
J	4.603	A	4.451	N	8.919	C	0.216	Influential element
F	4.354	H	4.418	K	8.909	O	0.164	Influential element
K	4.320	C	4.417	I	8.691	M	0.023	Influential element
G	4.318	B	4.255	L	8.631	G	-0.188	Influenced element
E	4.287	N	4.207	C	8.620	H	-0.191	Influenced element
C	4.202	M	4.199	J	8.479	A	-0.266	Influenced element
M	4.176	G	4.130	G	8.448	F	-0.305	Influenced element
L	3.964	O	4.090	F	8.402	N	-0.504	Influenced element
O	3.937	F	4.048	M	8.371	J	-0.727	Influenced element
I	3.764	J	3.876	O	8.017	B	-1.100	Influenced element

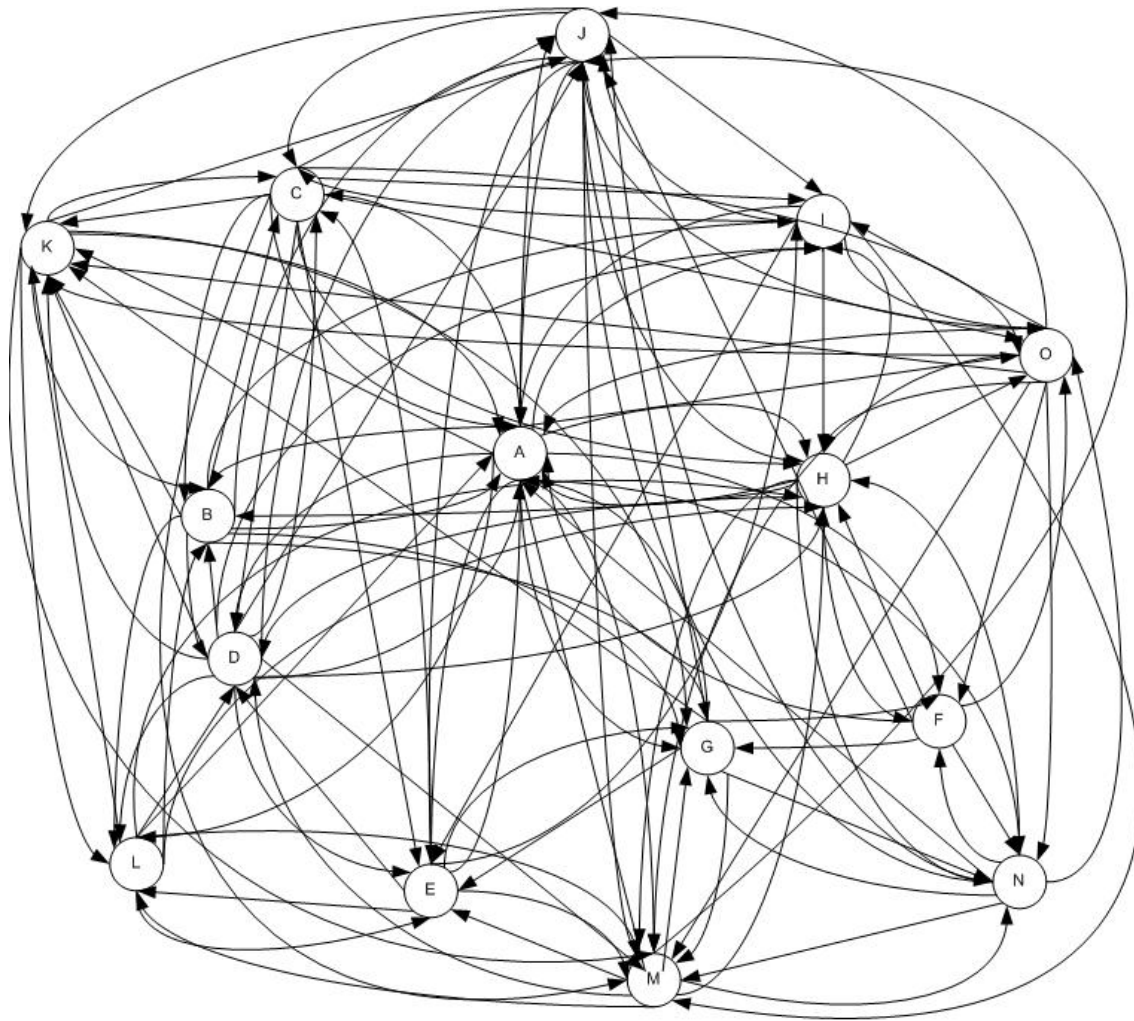


Figure 1. Diagram of direct relations among indices