Investigation the Electronic Chain Supply Management System in a Competitive Atmosphere and by Attention to Environmental Issues

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**Abstract**

Nowadays, in a world that manufacturing enterprises are working under hard competition condition and produce. On the other hand, electronic chain supply management which is the result of using the internet in this kind of management has made the enterprises to evaluate the demands of costumes and helps them to reach their goals in a competitive atmosphere. In this way, enterprises do not pay attention to hazards of using different materials. The main purpose of this research is investigating the electronic chain management in a competitive atmosphere and the research shows that competitive pressure has a significant effect on the amount of acceptance of electronic chain supply management. Moreover, the positive and significant effect is observed in the acceptance of enterprises for electronic chain supply management for competing with competitors.

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1. **Introduction**

Worldwide completion in an environment that permanently is changing has led to institutions understand the importance of flexibility and show reasonable and on time reaction [1]. Nowadays, institutions need to be global and be present in this big area to survive. Even if they want to be at the local or national level they must think globally. While globalization and obtaining a convenient place in the world and keeping the gained values needs to benefit from up to date science of world and correct management patterns like supply chain. In recent years in the world supply chain management was center of attention; but it should be considered that on the other hand success and health of an organization depends on health or environment of the organization and individuals in interaction with organization also health of individuals and environment depends on having healthy organization but today's because of lack of attention about the environmental issues we observe pollutions which lead environmental pollutions. Moreover, it leads to illness and weakness of human and finally leads to a vicious circle which only conveys the pollution from environment to organization, from organization to environment, from organization to individuals, from an organization to another organization, and ... and it is not clear that what influences it has on the performance of the organization itself and what injuries it has for future peoples [2]. Andic and et al. (2012), through the research which is done by adding a three letter word to supply chain management, again it is emphasized on abilities of this correct pattern [3].

Many of buyer companies demand that suppliers do supply chain management methods even do added environmental requirements and importance of this issue in worldwide level is clear for suppliers. Each opportunity of business in a new atmosphere, without practices and green supply chain management methods, are hardly under pressure. Environmental look at supply chain in every country, every industry, and every level arise as an issue [4].

Deyabat and Goyname have done a study with the title of "investigating the effect of drivers for doing green supply chain management" in the year 2011. The purpose was developing an interpretative modeling structure frame in different parts of green supply chain management in a case study in a company in the south of India which different stimulations
of supply chain management are identified and then my attention to literature in this field and interview with experts a model got presented based on this [5].

Tinsel and Alpin have done a research with the title of risk evaluation and management for supply chain networks in 2010. The purpose of this study is to show that how a network model can be used for modeling and analysis of supply chain network. This method got done by an industrial study case. The findings of the study show that the performance of system gets improved by risk management actions and total costs of the system can be decreased by decrease scenarios [6].

Supply chain management is one of the new discussions in the supply chain area which pay attention to the importance of environmental issues in industries supply chain management. Considering the importance and necessity of sustainable development and industries' highly dependent on their environment, the importance of obeying environmental issues in supply chain plans increase day by day. In this research, the effect of observing environmental issues on performance business in the supply chain is investigated. Investigating the effect of the green supply chain on the performance of institutions will lead to stimulation of institutions from observing environmental issues and protecting the environment [7].

2. Importance of supply chain management

Zacharia, Z. Nix, N., and Lusch, in recent years supply chain management, has been a matter of interest by many of individuals in scientific assemblies, scientific publishers, conferences, business development plans, and courses presented in universities. The condition which has led to the definition and planning such a view is a daily increase of competitiveness and efforts for surviving the institutions which are resulted from close communication and advances in information technology [8]. Institution considers the satisfying the needs of customers as the secret of surviving. Needs and interests of the customer can include a decrease in price, on time shipping, convenient quality, observing environmental requirements, and so on. Supply chain management is a view that based on it satisfying these needs is done not only by final existence ending to the customer but by other upstream suppliers. In another word not one supplier but some of the suppliers are considered [9].

In Europe 76% of companies are small and medium. These small and medium companies are responsible for 60 to 70 percent of all of the industrial pollution, 40 to 45 percent of the production of greenhouse gasses, 40 percent of use of water and energy, and 70 percent of the production of industrial wastes [10]. based on published statistics in the year 2009, high percentage of companies of South Korea are small and medium which are considered as suppliers of big companies and are fighting for matching with changes in their business environment and global highlighted companies of Korea for being matched with the new environmental rules are implementing standards and environmental management system in their supply chain. However, still, some of the suppliers have not managed to do anything for reaching their environmental desirable performance level by buyer companies also as consumers.

Iran as a developing country which passes the stages of being industrialized in some recent decades is facing problems related to industrial pollution and dangerous materials [11]. The fast growth of industry and industrial development has pressurized the natural environment of the country. Moreover, using inappropriate and old technologies and inefficient management in industries have led to the extra use of raw materials. Extreme of environmental pollutions resulted from waste materials in cities and industries center of aggregation is in a way that has attracted the interest of science and performing resources for correct excretion or principled recycling of this material (Zacharia et al. 2013) in order to prevent irreparable damages, observing environment management standards is essential [12].

3. Research methodology

Present research is analytical descriptive and it is based on practical purpose. Considering that the questionnaire will be used for gathering the data of research, the present research can be accounted as field research. The data and information will be collected from documents existing in libraries and websites. The tool of gathering the information is a questionnaire. Statistic population of research is all of the production companies accepted in Tehran stock exchange. The sample of research is determined by the based availability of companies for distributing the questionnaires. Based on this 115 companies got selected in which the questionnaire got distributed through their senior managers. After gathering the data of sample companies, for creating an information bank, the Excel software will be used and for analyzing the data and test of hypothesis the PLS model will be used.

The concept of validity answers to this question that measurement tool how much evaluate the intended characteristic. Without knowing the validity of measurement cannot be sure about the accuracy of resulted data. Invalidity determination of intended questionnaires in this research, the validity of content and validity of structure is intended. Content validity is a type of reliability which usually is used for reviewing the components of a measuring tool, in fact,
in this kind of validity is the process of determination of tool questions being known by attention to characteristics, experts, knowledge, and whatever is measured. Content validity is determined by specialists and masters [12].

Meaning of validity of measurement tool is that if we repeat measuring the same characteristic with the same tools again and again how much the results are similar, accurate, and reliable. In this research, the Cronbach Alpha Method is used for measuring the reliability.

3.1. Research hypotheses

Main hypothesis of the research is as below:

Competitive and environmental advantages have a significant effect on probability acceptance and amount of acceptance of electronic supply chain management system.

Secondary hypotheses are also defined as below:

The business partner has a significant effect on the probability of electronic supply chain management system acceptance.

The competitive pressure has a significant effect on the probability of electronic supply chain management system acceptance.

The business partner has a significant effect on the amount of electronic supply chain management system acceptance.

The competitive pressure has a significant effect on the amount of electronic supply chain management system acceptance.

Figure 1. A research model

4. Results and findings of research

Information analysis is one of the main foundations of scientific studies. In this section different statistical analysis methods are used for answering the edited problem and making a decision about confirming or rejecting the hypotheses which are intended for research. Frequency of managers of companies accepted in Tehran stock exchange in terms of education variable is presented in the histogram chart of this variable in form of figure 2; it can be observed that most of the frequency is related to managers with a bachelor degree (63 people), and least frequency is related to managers with a high school diploma with frequency of 5 people.
Since acceptance probability variable of the electronic supply chain management system is a dual nominal variable (yes or no), logistic regression test in SPSS software is used for evaluating the effect of research variables on acceptance probability of electronic supply chain management. The result of the logistic regression test is presented. All of the indexes of the table indicates that model of the effect of independent variables on acceptance probability of electronic supply chain system is appropriately fit.

### Table 1. Results of Logistic regression test

| Significant level | Wald statistic | B   | Components                      |
|-------------------|---------------|-----|---------------------------------|
| 0.059             | 22.587        | 5.411| Effect of a competitor firm     |
| 0.038             | 37.847        | 4.256| Effect of competitive atmosphere|

The validity of a questionnaire is investigated by two convergence and divergence validity criterion. Convergence validity addresses the amount of ability of indexes of a dimension in expressing that dimension and divergence validity indicates that structures of research model must have more correlations with their questions than with structures. For evaluating convergence validity AVE criterion (average extracted variance) related to first order variables is used which the results of this criteria is shown in table 2. Acceptable value for AVE is 0.4.

### Table 2. Variance mean

| AVE          | Components                      |
|--------------|---------------------------------|
| 0.7154       | Effect of competitor firms      |
| 0.8124       | Effect of competitive atmosphere|

For investigating model reliability combinational reliability and Cronbach Alpha are done. Cronbach alpha shows the amount of availability of questions inconvenient expression of dimension related to them. Moreover, the combinational reliability coefficient determines the amount of correlation of questions of a dimension to each other for enough fit of the measurement model. The results of Cronbach alpha and combinational reliability and factor loads are illustrated in table 3.
Table 3. Reliability results

| Cronbach alpha | CR   | Factor load | Items | components                  |
|----------------|------|-------------|-------|-----------------------------|
| 0.738          | 0.759| 0.615       | Q1    | Effect of competitor firms  |
|                |      | 0.726       | Q2    |                             |
|                |      | 0.739       | Q3    |                             |
|                |      | 0.764       | Q4    |                             |
| 0.697          | 0.736| 0.775       | Q5    | Effect of competitive atmosphere |
|                |      | 0.895       | Q6    |                             |

For analyzing and evaluating a model of this research, analysis of data by structural equation model is used. Structural equation modeling is a statistical model for investigating the linear relationship between unobserved and observed variables. The used software in this research for this analysis is PLS-SMART. In Smart PLS software the value of t shows the significance of the effect of a variable on each other. If the value of t is more than 1.96, there is a positive effect and it is significant. If it is between 1.96 and -1.96 there is no significant effect and if it is less than -1.96 there is a negative effect but it is significant. Moreover, if the coefficients of the path are more than 0.6 there are strong relationships between two variables, if it is between 0.3 and 0.6 there is an average relationship and if it is less than 0.3 there are weak relationships. The results can be observed in figure 3 and figure 4.

Figure 3. Standard coefficients of the research model

Figure 4. Significance coefficient of research
5. Test of hypotheses

A business partner has a significant effect on the acceptance probability of the electronic supply chain management system.

By attention to the table one since the significant level of business partner is less than 0.05 (0.042), the intended hypothesis is confirmed; meaning that by 95% confidence level it can be said that business partner has a significant effect on acceptance probability of electronic supply chain management system.

Competitive pressure has a significant effect on the acceptance probability of the electronic supply chain management system.

By attention to the table, one since the significant level of competitive pressure is less than 0.05 (0.023), the intended hypothesis is confirmed; meaning that by 95% confidence level it can be said that competitive pressure has a significant effect on acceptance probability of electronic supply chain management system.

A business partner has a significant effect on the amount of acceptance of the electronic supply chain management system.

The results shown in figure 3 confirms that the value of t for business partner variable is equal to 2 since this value is more than 1.96, business partner has a significant and positive effect on the amount of acceptance of electronic supply chain management system and the intended hypothesis is confirmed. Path coefficient shown in figure 2 for business partner variable is 0.513 which shows that business partner has a strong effect on the amount of acceptance of electronic supply chain management system.

Competitive pressure has a significant effect on the amount of acceptance of the electronic supply chain management system.

The results shown in figure 3 confirms that the value of t for competitive pressure variable is equal to 4.597 since this value is more than 1.96, competitive pressure has a significant and positive effect on the amount of acceptance of electronic supply chain management system and the intended hypothesis is confirmed. Path coefficient shown in figure 2 for competitive pressure variable is 0.551 which shows that business partner has an average effect on the amount of acceptance of electronic supply chain management system.

6. Conclusions

By the increase of concerns about the environment in a previous decade along with industry development and in operational process of supply chain management the pollutions of the environment must be considered too. All of the solutions to this problem are better to be combined in the frame of a supply chain trend of society.

Supply chain management is an important factor which directly has a relationship with efficiency and competitive position of the company. Making the supply chain green is a new concept. Based on this concept, the buyer uses his or her buying power for demanding better environmental performance form upstream supplier. This means that buyer has the role of facilitator for suppliers and helps them to turn to an ECO-friendly company.

As it is clear from the results of estimation, competitive pressure and business partner variables have a significant effect on the amount of acceptance of the electronic supply chain management system. One of the very dynamic problems in the supply chain is the phenomenon which is called the effect of bullwhip and means that small changes in product demand done by the consumer which is created in front point of the supply chain, turns to big and bigger fluctuations in demand through the backward path in this chain. Bullwhip effect addresses this point that being changeable in reached orders from retail sellers and wholesalers is much more than changes in changeability in demand of customers. Because of this, companies which are in different stages of this supply chain, each one has different images of market demand which this topic break the coherence of the supply chain and faces it with new challenges. Implementation of electronic supply chain management leads to decrease of bullwhip effect. On the other hand, it is customers that only determine the start and finishing point of institutions actions. By on time awareness of costumers needs continuously and according to their wishes product requirements can be identified every moment. This cycle can be improved permanently based on the feedback on customers' ideas and by flexibility and renewing the structure which is one of the effects of supply chain management. The present research can provide a substrate for future researches about electronic supply chain interaction effects on value chain and gain a competitive advantage. This dynamic cycle will create the possibility of structure renewing, simultaneous compliance with a change of type of product, agility, and designing the supply chain based on the kind and product lifecycle through the perspective of customers.
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