A STUDY OF THE EFFECTS OF INTELLIGENCE CAPABILITIES OF THE SUPPLY CHAIN ON THE SUSTAINABLE COMPETITIVE ADVANTAGES IN THE GRAINS AND COMMERCE COMPANY OF KERMANSHAH

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ABSTRACT

The present research tries to study the effects of intelligence capabilities of supply chain on the sustainable competitive advantages in the Grains and Commerce Company of Kermanshah to provide appropriate solutions for development and application of performance levels of company and also for improvements in the performance of supply chain and grains and commerce markets. The methodology of the present paper is a descriptive survey. Concerning the objective, it is also a practical research. The statistical population of the research involves the managers and staff of the Grains and Commerce Company of Kermanshah. The chosen sampling method in this research is a simple stratified random. The sample size is calculated as many as 200 people, the data collection method of research is questionnaires with five-option Likert scale, and in order to determine the reliability of the test, the Cronbach's alpha method is used. The collected data is analyzed by using SPSS and Amos software. For examining the research subject a main hypothesis and seven secondary hypotheses are used. The extent of influences and the P-values are calculated too, the results of the general relationship of the research variables suggest the approval of intraorganizational information system capacity with mutual trust and quality of information, flexibility of supply chain with responsiveness and costs of sold goods. Also, the relationship between mutual trust and the variable of information quality has the most influences with the standard coefficient 1.032. Regarding the rejection of the present research hypotheses suggesting the relationship between flexibility of supply chain with the quality of information and the mutual trust, and also the capacity of intraorganizational information system with the personal capacity of the information systems of leadership, and the capacities of strategic planning with the information systems, and regarding the data collected from the studied sample, we can come to the conclusion that the present research enjoys innovations.

Keywords: Intelligence Capabilities, Supply Chain, Competitive, Advantages

INTRODUCTION

Introduction and Statement of Problem

The supply chains will relate the suppliers to a manufacturing company and the company to its customers. For the proper handling of the supply chain, it is necessary to make sure of the excellent services to customers, low expenses and short cycling time (Zhang, 2007). The supply chains are of various types, the most important of which are the "integrated construction for storing", "continual refilling after evacuation", "order based construction" and "channel assembly" (Farrelly, 2005). The success of many private, state and military organizations depends on presenting approved outputs, presenting better products in a widespread spectrum and with a low cost and the quick performance. Appropriate presentation of these outputs (cost, quality, operation, delivery, flexibility and innovation) depends on the ability of the organization in handling the material, information, competition and money flow inside and outside the organization. This flow has been known as the supply chain. Due to the probable length and complexity of the supply chain or involvement of a large number of trade partners, some problems may occur. These problems can lead to dissatisfaction of customers and loss of sales and will impose high costs to the organization in case of delay in resolving. Some of the companies in the world class relate many of their successes to the supply chain management (Tourbayan et al., 2006).
The information technology is a revolution whose aim is to engender the basis of electronic supply chain. The intellectual application of information technology would make the electronic information exchange possible, would prevent from the entry of redundant information, would provide required information in the due time, would let the managers receive and follow the complicated information more effectively and also would exchange information with the members of supply chain more simply; therefore the supplier - customer relationships would widely improve (Mohammadi et al., 2011). Since the competition began to increase and the supply based market was replaced by the consumer (customer) based market, the companies had to improve their supply chain management in order to remain in this changing market for a longer time. Simultaneously, the companies began to use the computer systems in order to manage the supply chain. In the 1970s, when a large number of organizations began to settle the information technology, mechanization of activities was their greatest desire. The first applications of the information technology were used in the operational improvement of obtaining orders of inventory management and preparation systems of bills (Fornell and Larcker, 1981). The role of information systems in the organizational performance has effectively changed and today the information systems will create values for organizations (Rezaeeyan et al., 2007). The aim of that was to reduce the costs of data processing in the separate activities, but soon it became clear that the key improvements in efficiency would result from access to the related information systems. In the age of knowledge, the successful organizations are those that quickly run the new strategies based on the competitive advantages and learn from the market and customers; they modify and develop their operations and processes whenever required. By developing the information systems the planning systems of required material were created to reduce the problems of company in planning the production and purchase of materials (Jayaram et al., 1999). Considering the
supplier as a supply chain network whose final goal is to present the products expected by the customer was exposed in about 2000. According to the above discussions and the increasing speed of changes of information in the global markets, for achieving the competitive advantages of the market, that is achievement to the ability to deliver qualified products to the customers with the lowest cost in the least possible time, the organizations have no other alternatives except engendering a close, coordinated and highly flexible relation with the whole factors involved in the production process –suppliers, producers and distributors (Youn et al., 2012). In this way, entering the supply chains, the information mechanisms can highly raise the efficiency and effectiveness of these chains, and so they are extremely considered by the pioneer companies in the global markets competition, this significant matter implies the necessity of conducting this research.

Review of Literature for Research
Milgrom and Roberts (1995) dealt with the effects of company size on the relationship between the acceptance level of information technology and three operational, strategic and financial levels of performance in a study. The results suggested that the company size is a key moderating variable in the operational efficiency. In other words, with an effective use of information technology in the relations with major and minor partners in the supply chain, the great companies can shorten the time lag and as a result, promote the operational efficiency. Jayaram et al., (1999) dealt with studying the relation between investment in information technology and operational efficiency in purchasing power. The information analysis showed that investment in information technology has a positive effect on operational efficiency of purchasing. Some of the developed purchasing acts as cooperation with suppliers, evaluation of suppliers, engagement with suppliers in developing and designing products and also logistic integration, accepting the information technology in the supply chain are basically necessary in conducting and also promoting the affairs. Johnston et al., (2004) in a research dealt with the effects of information technology on the capabilities of supply chain and the operation of companies. The findings suggested that involvement of information technology in the communication system of supply chain can lead to creating better facilities in the supply chain in the areas as information exchange, coordination, integration of activities and sensitivity in supply chain.

Jacobs et al., (2010) empirically dealt with studying the relative effects of designing, integrating and sharing information on the efficiency of supply chain. The data investigations show that integrating and sharing information are certain methods for increasing efficiency in the supply chain. The designing of a supply chain has also an important role in achieving the desired level of efficiency.

Youn et al., (2012) studied the effects of information technology on the supply chain and on the performance of business. The findings suggest that the information technology through three factors of the technical quality of information technology, usefulness of the information technology program and support of senior managers from information technology can significantly and positively influence the supply chain, and therefore they have a positive and significant relationship with the financial performance of the company.

General Objectives
The General Objective
Determination of the influences of information potentials of the supply chain on the sustainable competitive advantages in the Grains and Commerce Company of Kermanshah.

The Specific Objectives
Determination of the influences of intraorganizational information system capacity on the mutual trust in the Grains and Commerce Company of Kermanshah.

Determination of the effects of mutual trust of companies on the information quality in the Grains and Commerce Company of Kermanshah.

Determination of the mutual trust on the flexibility of supply chain in the Grains and Commerce Company of Kermanshah.

Determination of the information quality of company on the inflexibility of supply chain in the Grains and Commerce Company of Kermanshah.
Research Article

Determination of the supply chain flexibility on responding the customers in the Grains and Commerce Company of Kermanshah.

Determination of the supply chain flexibility on costs of sold goods in the Grains and Commerce Company of Kermanshah.

Research Model

Informative capabilities of supply chain

<table>
<thead>
<tr>
<th>Strategic Planning capacities of information systems</th>
<th>Personal capacities of the leadership of information systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutual trust</td>
<td>Flexibility of supply chain</td>
</tr>
<tr>
<td>Information system capacity</td>
<td>Sold goods price</td>
</tr>
<tr>
<td>Information quality</td>
<td>Responsiveness</td>
</tr>
</tbody>
</table>

Conceptual model of research: Powell et al., 2014

Hypotheses

The Main Hypothesis

The information potentials of supply chain have a significant effect on the sustainable competitive advantages in the company.

The Sub-hypotheses

The capacity of intraorganizational information system has a significant effect on the mutual trust of the company.

The capacity of intraorganizational information system has a significant effect on the quality of information in the company.

The mutual trust of company has a significant effect on the quality of information in the company.

The mutual trust of company has a significant effect on the flexibility of supply chain.

The information quality of the company has a significant effect on the flexibility of supply chain.

The flexibility of supply chain has a significant effect on the responsiveness to the customers.

The flexibility of supply chain has a significant effect on the costs of sold goods.

The Statistical Population of Research

The statistical population of the present research involves the managers and staff of Grains and Commerce Company of Kermanshah. Considering the fact that the statistical population size is limited, to determine the sample size of research and to examine the reliability of the questionnaires as well, the primary study was conducted at first with 25 samples, after the data collection and information analysis and estimation of the mean and standard deviation and being placed in the sample size determination.
formula of the limited population, the sample size was estimated as many as 200 people; to determine the reliability of the test Cronbach's alpha was used.

MATERIALS AND METHODS

Research Methodology

The present research is practical regarding the objective, and regarding the variable it involves the qualitative variables and can be categorized in the causative-descriptive research class. Regarding the data collection method, it is a descriptive survey.

The Method and Tools of Data Collection

Library Based Studies

The library resources, note taking, required books and also World Wide Web were used as sources of information for the theoretical and literature review of the research.

Fieldwork Survey

In this section, in order to collect data and information for analysis, the questionnaires were used. The data collection method of the research is a field work and the data collection tool is a questionnaire. The distributed questionnaires involves 30 questions; for responding to the questions the five- item Likert scale (number five comes frequently while number one comes rarely) was used.

Data Analysis Methods and Tools

For data analysis and hypothesis testing in this research, the descriptive statistics and inferential statistics especially confirmatory factor analysis and structural equation method with AMOS software were used. In the section of inferential statistics used in this research, SPSS software was used which involved the following case: Kolmogorov-Smirnov test.

This test was used for studying the normality of observations; in order to examine the relationship between the dependent and independent variables and to study the research hypotheses using SPSS22 software, we used Pearson correlation coefficient test or Spearman test.

For that aim, the statistical tests as T-student test, for examining the significance of correlation coefficients, analysis of variance and multiple comparisons and/or their non-parametric equations regarding the results of Kolmogorov-Smirnov test were used.

Also, for testing the set of causal relationships of the influential variables on the competitive advantage and on the studied components as well, the structural equations among the variables became equalled through AMOS software.

Data Analysis

In this article, the collected data through questionnaires was analyzed by the appropriate statistical techniques and the results were presented through descriptive and inferential statistical techniques.

Calculation of Correlation among the Research Variables

In order to calculate the correlation among the research variables the Pearson correlation test was used due to the data normality.
### Calculation of Correlation among the Research Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Capacities of strategic planning of information system</th>
<th>Individual capacities of information systems</th>
<th>Capacity of intraorganizational information system</th>
<th>Mutual trust</th>
<th>Information quality</th>
<th>Flexibility of supply chain</th>
<th>Responsiveness</th>
<th>Sold goods cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacities of strategic planning of information system</td>
<td>1</td>
<td>0.021=sig</td>
<td>0.069=sig</td>
<td>0.68=sig</td>
<td>0.091=sig</td>
<td>0.103=sig</td>
<td>0.062=sig</td>
<td>0.057=sig</td>
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<td>0.000</td>
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<td>0.000</td>
</tr>
<tr>
<td>Individual capacities of information systems</td>
<td>1</td>
<td>0.020=sig</td>
<td>0.071=sig</td>
<td>0.077=sig</td>
<td>0.015=sig</td>
<td>0.028=sig</td>
<td>0.093=sig</td>
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<td></td>
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<tr>
<td>Capacity of intraorganizational information system</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.511=sig</td>
<td>0.421=sig</td>
<td>0.639=sig</td>
<td>0.430=sig</td>
<td>0.318=sig</td>
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<tr>
<td>Mutual trust</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.862=sig</td>
<td>0.358=sig</td>
<td>0.847=sig</td>
<td>0.219=sig</td>
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<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Information quality</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.289=sig</td>
<td>0.819=sig</td>
<td>0.238=sig</td>
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</tr>
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<td></td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Flexibility of supply chain</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.334=sig</td>
<td>0.291=sig</td>
</tr>
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<td></td>
<td></td>
<td>0.000</td>
<td></td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Responsiveness</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>0.166=si</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>0.000</td>
</tr>
<tr>
<td>Sold goods cost</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
</tbody>
</table>

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The graph of the modified structural model of research with standard coefficients

**Hypothesis Testing**
In the following table, the results of hypotheses testing used in the research will be presented:

<table>
<thead>
<tr>
<th>Hypothesis results</th>
<th>Standard coefficient</th>
<th>Significance level</th>
<th>Critical ratio</th>
<th>Standard error</th>
<th>Non-standard estimation</th>
<th>General relation of the research</th>
</tr>
</thead>
<tbody>
<tr>
<td>supported</td>
<td>0.510</td>
<td>***</td>
<td>8.456</td>
<td>0.059</td>
<td>0.501</td>
<td>Capacity of intraorganizational information system → Mutual trust</td>
</tr>
<tr>
<td>supported</td>
<td>-0.106</td>
<td>0.023</td>
<td>-2.274</td>
<td>0.050</td>
<td>-0.113</td>
<td>Capacity of intraorganizational information system → Information quality</td>
</tr>
<tr>
<td>supported</td>
<td>1.032</td>
<td>***</td>
<td>18.520</td>
<td>0.060</td>
<td>1.112</td>
<td>Mutual trust → Information quality</td>
</tr>
<tr>
<td>rejected</td>
<td>-0.010</td>
<td>0.926</td>
<td>-0.093</td>
<td>0.108</td>
<td>-0.010</td>
<td>Information quality → Supply chain flexibility</td>
</tr>
<tr>
<td>rejected</td>
<td>0.056</td>
<td>0.618</td>
<td>0.498</td>
<td>0.123</td>
<td>0.061</td>
<td>Mutual trust → Supply chain flexibility</td>
</tr>
<tr>
<td>rejected</td>
<td>0.020</td>
<td>0.783</td>
<td>0.276</td>
<td>0.671</td>
<td>0.185</td>
<td>Capacity of intraorganizational information system → Personal leadership capacities of information systems</td>
</tr>
<tr>
<td>rejected</td>
<td>0.069</td>
<td>0.327</td>
<td>0.981</td>
<td>0.506</td>
<td>0.496</td>
<td>Capacity of intraorganizational information system → Strategic planning capacities of information systems responsiveness</td>
</tr>
<tr>
<td>supported</td>
<td>0.303</td>
<td>***</td>
<td>5.626</td>
<td>0.052</td>
<td>0.0293</td>
<td>Supply chain flexibility → Responsiveness</td>
</tr>
<tr>
<td>supported</td>
<td>0.288</td>
<td>***</td>
<td>4.237</td>
<td>0.065</td>
<td>0.274</td>
<td>Supply chain flexibility → Sold good cost</td>
</tr>
</tbody>
</table>
RESULTS AND DISCUSSION

Information quality will cause some changes in works and organizations. Instead of direct supervision, for example, the works will be controlled by computers, and as a result, the managers' control area will expand and the organizations will be broadened horizontally, and in this way, the information quality will improve. We live in the age of dissociation, so the financial shocks or traumas are continually injuring the organizations and they have to adjust themselves permanently with these changes. In the global economic system the competitors from around the world are facing each other. The increased competition will equip the organizations thoroughly against their traditional competitors that try to produce new products and also against the innovative organizations which deal with creativity, initiative and entrepreneurship. The successful organizations are those which can react properly against the quick changes occurring in the competition scene.

The rapid technological changes, increased risks, globalization and the privatization expectations are the present specialties with which the commercial organizations are faced. In order to be successful in such an environment, agility can create a competitive advantage that can be kept with fame in innovation and quality. The supply chain is a network that involves all the activities relevant to processing and changing of goods from the stage of raw materials to the final products and also the related information flow. Both the material and information are current above and below the network, and to be able to perform well and satisfy the customers, the supply chain needs a kind of correct management to engender mutual trust in the organization.

The flexibility of supply chain is a means that can satisfy the ideals of customers, companies and managers for access to better quality, more speed and better services with lower price. One of the services provided through the flexibility of supply chain for the commerce and business is the fairly complete and extensive information about the goods regarding their technical and commercial particularities. Such services in the real world would have high commercial values that cannot be achieved without spending much time and money. The companies that try to sale their products and services in this way are constantly in contact with their customers through various quick and low cost methods, and the constant support can encourage the people to buy products. Using the present resources and the derived experiences in this way, we try particularly and at a specific level to consider a list of verifiable subjects at the graduate (and occasionally at the PhD) levels in the form of a research project or dissertation or any other forms. The comparative study of management and utilization of fluctuations and deviations emphasizing on the intraorganizational information system.

Presenting a model for influencing the leadership methods in the responsiveness and flexibility of supply chain.

Evaluation of the supply chain performance in critical conditions.

Focusing on evaluation of the general performance of the supply chain and more consideration of the criteria for referral management and services to customers.

Influential factors on the success or failure of implementation of performance appraisal systems.

Studying the probable efficiency of efforts in implementation of the performance appraisal systems regarding the costs, especially for small and medium organizations.

REFERENCES


Research Article


