HOW DO THE INTERORGANIZATIONAL INFORMATION SYSTEMS MAKE THEIR IMPACT ON THE ENTERPRISE COMPETITIVENESS?

Nataliia Medzhybovska*

1. Introduction

Today companies act in an increasingly dynamic and complex environment, they have more difficulties making forecasts and in adapting themselves to the continuous changes in their environment. In order to be able to compete in this kind of world, it is necessary to innovate at an extraordinary speed, continuously improving the products, services and processes. Therefore, there is a need for a review the role of information technology and information systems (IT/IS) in gaining the competition advantages.

The concept of IT as a powerful competitive weapon has been strongly emphasized in the literature. For instance, Slywotzky and Wise [1, p.94-95] consider that «today, the explosion of digital information makes available a new array of strategic options, bringing within reach the Holy Grail of differentiation». According to Clemons and Row [2, p.276], «information systems are strategic business tools, frequently essential to a firm and central to its competitive strategy». Such opinion is supported by the producers of IT, business – consultants and journalists. Modern American oligarchs – Benjamin Rosen, Bill Gates, Charles Wang, Craig Barrett, Michael Dell and other – insistently suggest to the world that without information technologies business has no chance to win. According to them, success is reached to the adherents of information technologies, and their opponents unchangingly remain overboard.

This paper helps to understand how the impact of IS has affected company's ability to remain competitive. This study focuses on the role played by interorganizational information systems (IOIS) in enhancing competitiveness of firms in manufacturing sector. Interorganizational information systems are automated information systems shared by two or more companies [3, p.135]

2. Theoretical contests

The value of IS can be studied in terms of the three main schools of strategy:

- Five Competitive Forces (Porter, 1980s).
- Resource Based View (Barney, 1990s), Core Competence (Hamel/Prahalad, 1990s).
- Delta Model (Hax, 21st).

The competitive forces approach developed by Porter emphasizes the exploitation of market power as means to reach sustained competitive advantage. Important here is to relate company's position to its environment and to maneuver in such a way that it can erect barriers for competitors and protect the business. So, in terms of Porter's five forces industry structure model, the strategic use of IS can help build barriers of entry or put in place barriers of entry for competitors, it can help increasing the switching costs for customers and decrease their bargaining power, enable companies to create substitute products, and limit the bargaining power of suppliers [4, p.140-144].

The Resource Based View and Core Competence model focus on rents to the owner of scarce resources belonging to the company rather than profits from a certain position in the market place. The key concepts of these perspectives are resources, capabilities and strategic assets.

* Nataliia Medzhybovska; Ph.D.,Docent; Economic Cybernetics Department; Odessa State Economic University; Email:< nmedzh@oseu.edu.ua>

Hence, thee concepts emphasize how firm-level IS dynamic capabilities may translate into sustainable competitive advantage by generating "generic lead time" (time taken by a competitor to duplicate an IS system, application or IS-based product), "competitive asymmetry" (the ability of the competitor to replicate the first mover's system", and "pre-emption potential" (the ability of the first mover to pre-empt the retaliation by the follower [5, p.34].

In our opinion the best conceptual framework to analyze the value of IS is the Delta Model proposed by Arnoldo Hax [6, p.379-391]. As a unified strategic framework developed after the mainstream adoption of Internet, it provides specific strategic options beyond the Best Product Strategy such as Total Customer Solutions and System Lock. Within the wide range of potential strategies the Delta model points out the potential strategic value of IT/IS as enabling technologies to promote boding (with customers, complementors, suppliers, etc.) and lead to a range of potential strategies such as "redefining the customer experience" (e.g. Saturn, Barnes & Nobel, Startbucks iTunes), "customer integration" (Dell, Mathworks), "dominant exchange" (Google, YouTube, iTunes), etc.

2.1. The model

We offer a model which recognizes three sources of sustainable competitive advantage provided by IOIS: Product Differentiation, Cost Leadership and System Integration (figure 1). This model based on idea of Total Customer Solutions and Extended Enterprise by Hax [6, p.379-391] and classic model of Competitive Advantage by Porter [7, p.215-263].

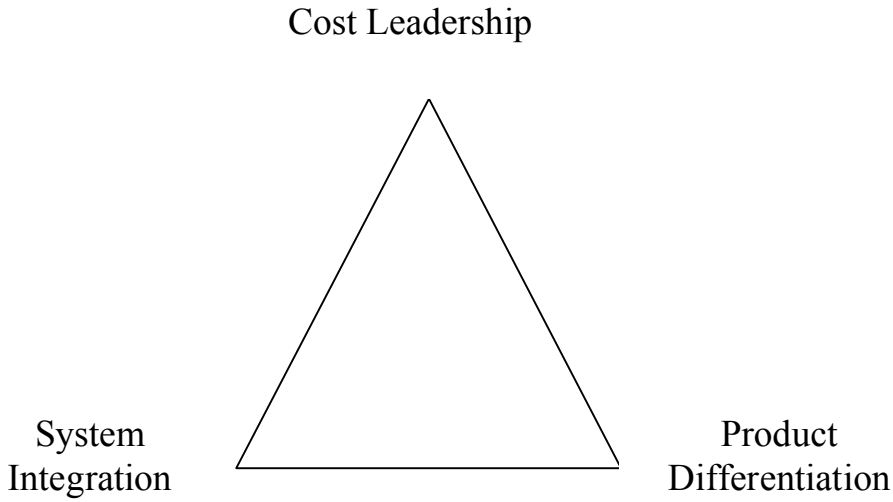

Fig. 1. IOIS impact model

3. The explanation

In terms of Porter classic competition strategies, the effective use IOIS allows:

A. To reduce the total cost of ownership / cost leadership.

B. To develop the unique (differentiated) products / product differentiation.

In this way, the basic sources of cost leadership due to the effective use IOIS are reduction in transaction costs, reduction in inventory levels and reduction in material costs.

The basic sources of reduction in transaction costs are associated with saving in costs of information gathering and processing, namely:

I. Reduction in information gathering costs (associated with electronic markets and/or electronic procurement systems applications):

- fast and effective access to the large variety of products, services, information and contractors in the real-time mode;
- extended possibilities of search and analyzing;
- improved information about products and suppliers.

II. Reduction in information processing costs (related to the better utilization of staff, cutback of the paper/printing, postage/mailing, telephone costs etc.):

- less paperwork which translates into fewer mistakes;
- fewer routine tasks and labor costs;
- shorter order processing and fulfillment cycles.

The lowering of inventory level refers to shortening of order fulfillment cycle time, that cause the reduction in insurance stock size and inventory carrying costs.

The electronic procurement solutions such us electronic marketplaces, reverse auctions, etc. can reduce the material costs due to large variety of suppliers, competitions between them and/or consolidating and leveraging organizational spending power.

Further, IOIS allow to differentiate products not only through unique features that the customer values but also with the help of total customer solutions and deep customer relationship that allows to develop value propositions that bond to each individual customer.

IOIS help to extract data regarding the customer preferences, monitoring the customer accounts, and studying the websites customers visited in order to segment and target its customers and use this proprietary marketing information to design innovative customized products and manage customer relationships more effectively.

Clearly, that customized products and customized relations are possible only in case of using IS/IT at all levels in the value chain which includes the extended enterprise – the firm, the customers, the suppliers, and the key complementors. IOIS enable multiple organizations to collaboratively design, develop, build, and manage products through their lifecycles.

The total customer solutions suppose to provide a coherent composition of products and services aimed at enhancing the customer ability to create their own economic value. It redefine the ways to capture and serve the customer by putting together the overall set of corporate capabilities complemented by proper external parties that enhance product offering.

System integration means the integration of business processes of two or more independent organizations through the exploitation of the IT/IS capabilities [8, p.814] and has purpose to remove the asymmetry in an informative exchange between business partners. Successful system integration requires an atmosphere of trust where all the members of supply chain agree to cooperate and to honor the commitments they have made to each other. They must be able to work together on the same goal and to redesign some of their business processes so that they can coordinate their activities more easily.

For instance, a basic level of system integration may occur when the linked firms develop product code translation tables so that employees at the participating firms can place/receive orders using internal product codes. A higher level of system integration may be possible when the buyer's computer determines a need for a product, based on preset reorder levels, and automatically transmits an order to the supplier's order entry system without human intervention. At the highest level of system integration, the firms can create close electronic coupling among the processes that create or use the information being exchanged.

Firms can integrate their systems with those of their supply chain partners to coordinate demand forecasting, resource planning, production planning, replenishment, shipping, and warehousing.

They can work jointly with suppliers on product design and marketing. Customer can provide feedback for marketers to use to improve product design, support and service [9, p.58].

The main operations able to facilitate interorganizational coordination and decision making are presented below:

1) automation the order placement, processing and payment;
2) order status control;
3) vendor managed inventory;
4) monitor the quality of the products being produced;
5) joint operational planning;
6) joint strategic planning.

For example, the joint operational planning is based on adequate information sharing about the preferences of customers and possibilities of suppliers and complementors. It can be realized with the following:

- access the supplier's production schedule;
- access the supplier's inventory levels of finished products;
- access the supplier's inventory levels of raw materials;
- monitor the supplier's production capacities;
- access the supplier's shipping/delivery schedule;
- exchange production (or sales) data with the supplier.

Joint strategic planning is based on the sharing promotion plans with the trading partner as well as harmonization of the efforts on demand forecasting.

Figure 2 illustrates the main sources of sustainable competitive advantage provided by IOIS.

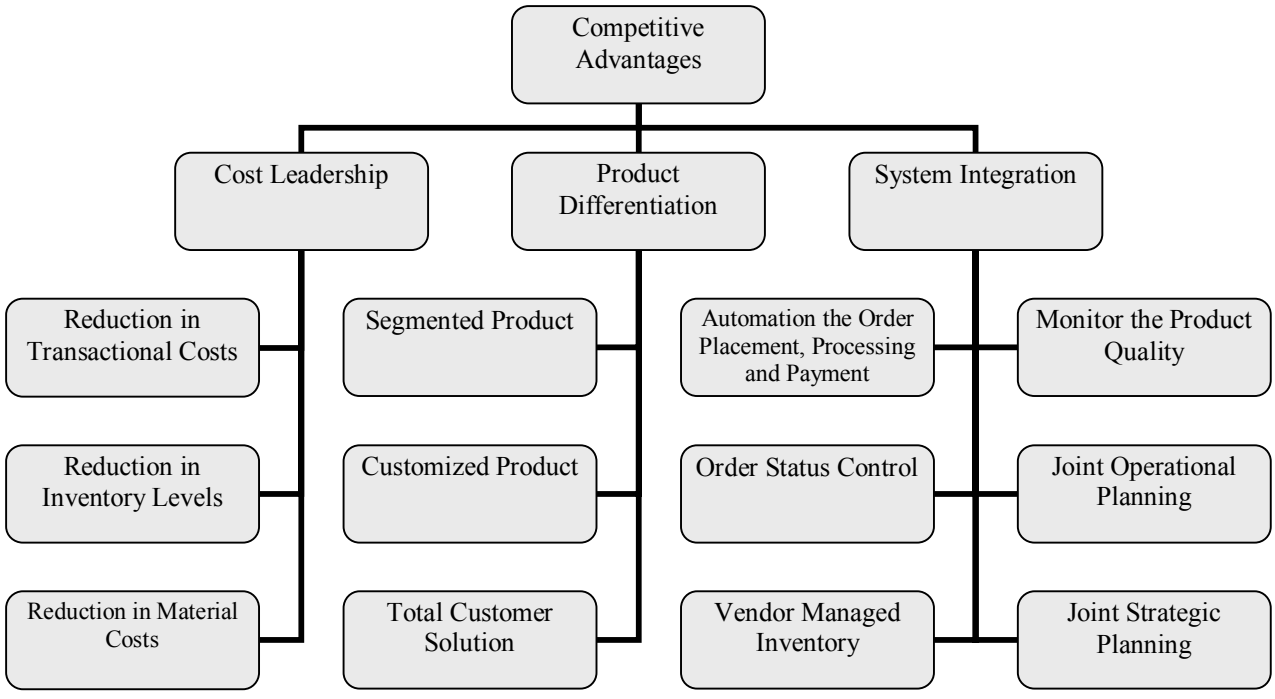

Fig. 2. Basic sources of sustainable competitive advantage provided by IOIS

4. Conclusions

The model developed here identifies a few important building blocks of competitive advantage such as cost leadership, product differentiation and system integration. It uses the idea that the new era of hypercompetition dramatically changes the competition paradigm. It is possible to win in hypercompetition market by mastering the art of dynamically repositioning oneself not as separate business unit but as part of extended enterprise with the central focus on customer. The drivers are the system economics and the overall system supply chain, which provide the engine for sustainable competition advantage.

Future research is needed to develop the framework of external and internal links of extended enterprise and impact IOIS on their performance.

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Summary

This paper focuses on the role played by interorganizational information systems (IOIS) in enhancing competitiveness of firms in manufacturing sector. The model developed here identifies a few important building blocks of competitive advantage such as Cost Leadership, Product Differentiation and System Integration. It uses the idea that the new era of hypercompetition dramatically changes the competition paradigm. It is possible to win in hypercompetition market by mastering the art of dynamically repositioning oneself not as separate business unit but as part of extended enterprise with the central focus on customer. The drivers are the system economics and the overall system supply chain, which provide the engine for sustainable competition advantage.

Keywords: competitive advantage; interorganizational information systems; total customer solutions; extended enterprise; cost leadership; product differentiation; system integration.

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