

## SUPPLY CHAIN MANAGEMENT AND INNOVATION IMPACT ON MARKET DEVELOPMENT

Msc. Ariana ELEZAJ

### Abstract

Today's global business must be agile and responsive to be competitive. Innovations in information and communication technology can be major drivers of globalization, making possible a networked, interdependent global economy. Managing supply chain in this new environment, thus, necessitates tying together people, processes and information.

This can be accomplished through the use of the Internet that Supply Chain Management can be based on. Internet-Based Supply Chain are the solutions, which tie together relationships connecting the company and all its partners on a common platform and collectively acting to meet company, its suppliers, and customers' needs. In order to implement Internet-Based Supply Chain successfully, there is a need to analyze benefits and barriers of this concept.

Permanent Innovation is needed in many markets and industries to maintain or increase competitive advantages. Technology is a key component of innovation, and a product of knowledge. Knowledge is becoming an increasingly important factor.

In this research, I have used interviews as qualitative research in different companies from different sectors. Finally I have set them recommendations which will have an impact on market development in the future.

Key words: Supply Chain Management, Innovation, IT solution, human resources, competition.

### Introduction

Today's global business must be agile and responsive to be competitive. Additionally, the infusion of information and communication technology into every aspect of operations is transforming business environments from a production-centric model to one that is information and customer centric<sup>1</sup>. Innovations in information and communication technology can thus be major drivers of globalisation, making possible a networked, interdependent global economy traversing nation-states.<sup>2</sup> Internet has dramatically shifted the traditional business model creating a new competitive market space.<sup>3</sup>

In 2015, is expected to be nearly 3 billion Internet users worldwide, up from 2 billion in 2011. Global B2C E-Commerce sales reached between USD 400 and 600 billion (between EUR 300 and EUR 450 million) in 2010, and between USD 700 and 950 billion is expected for 2013. E-commerce is one of the most visible examples of the way in which information and communication technologies (ICT) can contribute to economic growth. It helps countries improve trade efficiency and facilitates the integration of developing countries into the global economy. It allows businesses and entrepreneurs to become more competitive. And it provides jobs, thereby creating wealth.<sup>4</sup>

The supply chain requires full integration across many allied business activities. This integration provides significant competitive advantage including the ability to outperform rivals on both price and delivery. Customization of products, volumes and even bottom-line profits depend heavily on the level of supply chain collaboration and integration through IT systems and Internet-based applications.<sup>5</sup>

When taking advantage of Internet-Based Supply Chain applications, companies can get many benefits related with the fact that they can exchange data in real time and develop instantaneous decision-support systems. The implementation of up-to-date IT solutions represents the biggest challenge to face the resistance of changes, since in this area employees have to make a greater effort in

order to become efficient and agile when using this. Moreover, there are other barriers related with the implementation of the IT solutions and Internet-Based applications, which need to be overcome. One of the most important is the one related with economic resources because its implementation is costly, time consuming and risky to install. If there is any failure in that it could raise to high expenditures. Other considerations that have to be taken into account are training barriers, exposing proprietary information and intellectual capital.

Electronic Data Interchange (EDI) refers to the computer-to-computer exchange of high- volume, routine business information between trading partners, using a national or international standard format.<sup>6</sup> The main difference between EDI and Web-based EDI is a type of connection between companies. The web-based EDI does not need to have VAN connection since the users have the Internet connection and they have installed. There are many positive outcomes and benefits as well as drawbacks and barriers of the Internet-Based Supply Chain, which need to be analysed carefully in order to implement Internet-Based Supply Chain successfully.

Positive Outcomes and Benefits	Drawbacks and barriers
Revolutionary improvement	Exponentially more complex
Dynamic and collaborative networks	Requirement of more efficient communication
Stronger integration between members	Members disparity in the improvements
Improvements in inventory levels	Fail to meet expectations.  Afraid of losing competitive advantage within the chain.
Minimisation of cycle times	
Respond more quickly to customer demands	
Improve operational efficiency	Risks increases because greater impact on errors.
Real time access information	
Better information exchange	

<sup>1</sup> Ghiassi, Spera, 2003, p.17

<sup>2</sup> Morrison, 2002, p.304

<sup>3</sup> Ghiassi, Spera, 2003, p.17

<sup>4</sup> E-COMMERCE AND DEVELOPMENT REPORT 2011

<sup>5</sup> Lefebvre, et al, 2002, p.1

<sup>6</sup> Patterson, et al, 2003, p.97

Virtual unified enterprise	
Reduces in costs after its implementation	Costly, time consuming and risky to install.
Increase human resources efficiency	Training programs Make employees feel comfortable
Expose performance clearly	Expose proprietary information

Figure 1. The comparison of positive outcomes and benefits versus drawbacks and barriers

The purpose of the paper is to determine positive outcomes and benefits as well as drawbacks and barriers of Internet-Based Supply Chain implementation.

In this research I used qualitative methods in data collection and analysis because this method fits very well to the topic and purpose of the paper. I have carried out four interviews with companies from different sectors. Those companies either have implemented Internet-based applications in managing their supply chains, or they are still in the process of the implementation, or they have not implemented that yet. I contacted those companies through e-mail and telephone. A list of questions has been prepared and sent to the companies in order to let them be prepared for interviews in advance. The questions for interviews can be found in Appendix 1.

In order to find out how the implementation of Internet-Based Supply Chain is being practiced, we have gathered data from several companies that either have gone through that process or they are still working on it.

Systembolaget is a retail enterprise consisting of 420 stores and about 590 local agencies, serving about 2 million customers every week. The business is a state owned monopoly, and from the very outset its retailing activities have been separated from any private profit.<sup>7</sup>

The company have implemented an internal system for communication between the stores in different places and the headquarter. The company has also a web page where customers can find catalogues of the products and place an order. Customers have payment ability through Internet but they have to go to the store and pick up the product. Communication throughout the supply chain is divided into two phases: communication between stores and headquarter, and communication between the headquarter and suppliers. Thus, the stores have no communication with the suppliers. Communication between headquarter and suppliers is organized through telephone, fax and email. The internal system "Leadakanalen" uses EDI that is not based on the Internet. The company uses this system mainly to share information concerning inventory levels and storage issues. The company uses Internet only to exchange some information via email to headquarter or other stores. So the use of Internet is only limited to emails and E-commerce through the web page.

The company has had mostly positive outcomes with the combination of internal EDI, E-commerce and emails. The main barrier they had to overcome, was the fact that

management in stores located in small villages had some difficulties to incorporate the new technology with old people. In order to overcome this barrier the management established some training programmes to get employees familiarised with the data system.

ProfilGruppen AB operates in the aluminium industry. The company develops, manufactures and supplies processed components, profiles and customized aluminium extrusions. ProfilGruppen AB is a knowledge-based company, which acts as a subcontractor and supplier to companies in the electronics/telecom, automotive, health care, building exterior and furnishing sectors, as well as a number of other product areas.<sup>8</sup>

The supply chain in ProfilGruppen AB is different than in other companies. This difference results from specific features of the industry and its specific manufacturing processes.

The products in ProfilGruppen AB are manufactured based on customers' requirements and orders – customer design products. It means that the company manufactures only these products, which are directly needed by customers. The company does not produce anything for stock.

The customer places an order to ProfilGruppen AB that is registered in the company's ERP system called Formula Industry. The company has established EDI system with its strategic customers e.g. Scania, but it is not based on the Internet. The implementation of EDI system cost a lot of money. Every message has a price. During the implementation, the company faced some problems but they all were rather obvious and small and they were the natural consequence of implementing and changing related processes. Every single supplier was trained by ProfilGruppen AB before the EDI had been established. The system is highly personalized in order to fulfil the company's all needs and expectations. It has undergone a lot of improvements and the company is still improving the system. The company is very satisfied with all those IT solutions and processes they have worked out and implemented. However, they consider the web-based solutions as the easier and cheaper way of communication, collaboration, cooperation and so on. The most important aspects (barriers to overcome) were training programs for its employees, cost and risk of installation.

Karlson Husindustrier AB operates in building industry. The company manufactures and sells wooden houses using healthy materials and production methods. Its main operations are located in Sweden but the company sells houses also on the European market.<sup>9</sup>

The company has different chain operation depending on the location. In the supply chain operation they have many suppliers where windows and wood suppliers are the most important.

Their suppliers have web pages with catalogues where they can observe the continuous variety of windows but when placing an order they do that through telephone and fax. They use email just for adjustments in

<sup>8</sup> <http://www.profilgruppen.se/>

<sup>9</sup> <http://www.karlsonhus.com/>

<sup>7</sup> <http://www.systembolaget.se>

changes and messenger application for real time communication. They have their own web page but it only provides basic information about the company and general features because, in this specific industry the eye contact with the customer is essential that cannot be accomplished through the Internet.

ICA is the largest grocery retail group with a total of 4,600 store located mainly in Sweden and Norway, but also in Denmark and the three Baltic States.<sup>10</sup> ICA operations are organized through distribution centres located in different regions in Sweden. There are seven distribution centres (DC), which cover the whole country. These distribution centers receive all kind of products from different suppliers. Some of the stores have established Web pages with catalogues where the customer can make a virtual shopping through the store, and then the ordered products are sent to their home. The reason of their interest of connecting themselves with the DC IT systems was that their products could be sold easily through the ICA stores network and also because in this sense establishing IT solutions with DC secures a long-term relationship (suppliers-ICA) and sales opportunities.

After this research, I have found that supply chains operate differently depending on the industry and sectors, where the companies operates in. These companies have developed their supply chain to expand their market and to facilitate the increase of profitability, getting their supply chains more complex. Also I have found that some other companies achieve competitive advantages through the implementation of high level of technology. Thus, I could say that the goal of achieving competitive advantage is the same, but the way of doing it could vary from one enterprise to another. Looking at my discussion above, I observed that the level of competition has a great impact on the level of technology and the final goal of its implementation.

Looking at the companies I have researched, I could say that if companies increase the information sharing, they can achieve a higher level of efficiency and probably they can increase the level of trust and interdependence with suppliers as well as the level of satisfaction with the customers.

After analysis, I have realised that even if the cost was supposed to be one of the biggest barriers to overcome, that was not presented in every company. The presence of this barrier is based on the power a company has in relation with the other members of the supply chain. Thus, a powerful company can get rid of the barrier by delegating it to other members of the supply chain. Finally, since there are always people behind any operations within any company, we have reflected on that human factor could create the most wonderful results for a company or fade a company away in a short period. Due to this over- importance of the human factor, we have to remark that it is more valuable and transcendent than any IT solution that could ever exist.

Conclusion

IT solutions do not fit to every company due to its specific attributes (nature of the industry). Thus, level of IT solution usage is determined by the nature of the industry, level of competition, limited areas of application, lack of IT orientation and social resistance to technological changes. As the biggest factor to take into consideration, I found the human resources factor. This factor is divided into two levels, the managerial and the labour level. In the managerial level we found the entrepreneurs, owners or managers in charge of making the decision of the implementation of the IT solutions. In this approach we found the risk of failing to meet their expectations regarding the system and its operation as well as the outcomes related to that. In the second approach, we found the big challenge of making all the staff involved in the operation of the IT solutions in order to understand its functions, introduce concepts related with its operation and make them feel comfortable with the new system.

Recommendation

I believe that SMEs with a lack of resources needed to afford the IT solutions are still able to access to these technologies. The company should establish relations with bigger partners able to afford the expenditures of the implementation. In this sense, companies can achieve an external support coming from particular institutions that deal with these kinds of issues. Nevertheless, I believe that this last statement applies only for those companies having operations in high-developed countries with well developed particular institutions.

Another approach, I recommend, is to install the same technology in all business units in order to reduce potential errors and minimize training barriers.

One way of overcoming the lack of IT orientation barrier can be benchmarking. The company with a low IT orientation should compare its performance of critical processes against those of its competitors or those companies who are considered to be the best-in- class in the use of IT solutions and Internet-based applications. Furthermore, the company can also co-operate with consulting companies, which provide valuable suggestions and remarks to different business areas.

The first barrier to take into consideration is the social resistance to changes. In this sense, the company should introduce the concept of continuous improvement through the training programmes, with the philosophy that "a company can always be better".

It is strongly recommended that companies should plan a comprehensive training strategy that offers employees hands-on access to a system that simulates real-world supply chain environments and provides insight into strategic supply chain operations.

Here are some recommendations related with how to make benefits possible and how to achieve success of Internet-Based Supply Chain implementation.

When developing a supply chain strategy, the company should begin evaluating how the links in its supply chain fit together. IT solutions do not require that much the employment of specific technology or solution as it demands an understanding of the business processes that

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<sup>10</sup> <http://www.ica.se/>

must work together. Most likely, the IT solution will seek to incorporate existing systems such as E-commerce, business planning, manufacturing and control, sourcing and distribution. The IT solution will typically include materials sourcing, forecasting, warehousing, inventory planning, transportation, purchasing, and finance. This

integration must be accomplished not only within the company but also with its customers and suppliers. Processes within all of these supply chain members must be evaluated and updated or even revised to meet efficiency and logistical expectations.

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