

SWOT analysis in supply chain clustering

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Abstract: The advance of the information technology and e-business strategies made it possible for the (para)pharmaceutical industry in Greece to be organised in clusters in order to deal with the invasion of big international production companies. The paper presents a case study of the Greek (para)pharmaceutical industry and explores the reasons that led the links of this supply chain to align goals and cooperate in an extended supply chain. The main goal of the research is to evaluate through the case study and SWOT analysis the benefits as well as shortcomings of entering in a collaborative cluster of a supply chain.

Key-Words: supply chain management, collaborative cluster, SWOT analysis, (para)pharmaceutical industry

1 Introduction

The appearance of big international Production Companies and the expected changes in the legislation have already troubled the “key players” of the Greek (para)pharmaceutical supply chain who needed to find ways that will deter great losses. These changes, in the market, had a huge impact on the local (para)pharmaceutical companies and compelled them to develop defensive strategies and optimise business processes.

Key players realised that the data sharing between parties in the supply chain is crucial for carrying out an efficient transition of products [1]. Research and development in information and communication technology made it possible to integrate the supply chains in such a way that the links among Suppliers, producers, third parties and customers are, now, easier to establish [2]. Enterprise Resource Planning (ERP) systems permit companies to manage their internal processes in an effective way, while e-business practices enable a rapid and low cost integration of supply chain partners [3].

Greek (para)pharmaceutical stakeholders comprehended that in order to confront the competition from these powerful new entrants, a functional upgrading of their value chain was emerged [4]. As a result they formed an enterprise cluster and implemented available technologies to

support it. Clusters, which are groups of firms engaged collectively in similar or related activities within a national economy [5], are able to achieve several economic and competitive benefits. Collaborative commerce (c-commerce) is a new approach to clustering and concerns the coming together of collaborators using IT, such as the internet, to integrate a company’s business processes with those of its customers and suppliers and exploit opportunities as they arise. It facilitates the flow of ideas, the transfer of technology and accelerates the transactions among cluster members (refer to Fig.3). The Greek (para)pharmaceutical cluster is a typical example of a national cluster operating within the framework of collaborative commerce, as partners managed to create a trusted and respected relationship with each other, supported by the appropriate technology.

The present research aims to evaluate through a Case Study and SWOT analysis the benefits as well as shortcomings of entering in a collaborative cluster of a supply chain. The outcome can be used by potential “actors” of a collaborative cluster who wish to know the equilibrium of such an endeavour. The rest of the paper is organised as follows: sections 2 and 3 provide the literature review concerning the clusters and the collaborative clusters, respectively. Section 4 presents the research methodology, while section 5 describes the

(para)pharmaceutical case study. Finally, section 5 and 6 present the SWOT analysis and the conclusions of this research, respectively.

2 Clusters

Clusters can be defined as “geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries, and associated institutions (for example, universities, standard agencies, and trade associations) in particular fields that compete but also co-operate”[6]. They are generally built up spontaneously by the local business players, who want to take advantage from the synergy of several factors existing in their geographic area, such as the presence of suppliers and customers, the access to information and know-how, the availability of resources, low transactions and communication costs due to geographical proximity.

The advent of the information technology, led companies and especially small and medium enterprises (SMEs) to realise that in order to remain competitive new approaches are needed. In this context, clusters and collaborative networks around Information Technologies (IT) became an emerged solution.

3 Collaborative clusters

Collaborative clusters are those clusters that adopt collaborative commerce in order to improve their transactions. Collaborative commerce (c-commerce) is a term that has emerged to describe a fundamental shift in the way companies interact. It is a set of techniques allowing companies to better manage their extended enterprise. It consists of cross-enterprise capabilities that leverage new technologies to allow an enterprise to manage, more effectively, today’s complex partner ecosystem through improved sharing of business processes, decision making, workflow and data with key trade partners [7]. Essentially, it concerns the coming together of collaborators using IT, such as the internet, to integrate a company’s business processes with those of its customers and suppliers and exploit opportunities as they arise.

The adoption of c-commerce increases business agility and enables business partners to operate complex transactions and share advanced and updated information [8]. C-commerce has the ability to revolutionise the way clusters of SMEs do business and provide competitive advantage to their members by:

- Lowering more transaction costs
- Reducing communication costs and response times
- Developing new capabilities
- Further improving networking and
- Sharing real-time information

As a result, integration, automation and collaboration are the key elements that ensure partners’ communication while advanced web technologies are needed to support this new business model [9]. Beyond simple online buying and selling, c-commerce needs efficient back-office operations and software systems that support collaboration. Enterprise Resource Planning (ERP) systems promote collaboration between key departments and functions within an enterprise, while business-to-business (B2B) strategies and web technologies have made it possible for partners to work together by efficiently integrating their ERP systems.

4 Research Methodology

This research work is based on analysing the Pharmaclust case study to evaluate the benefits as well as shortcomings of entering in a collaborative cluster of a supply chain. The steps of the research methodology are summarised in Fig. 1.

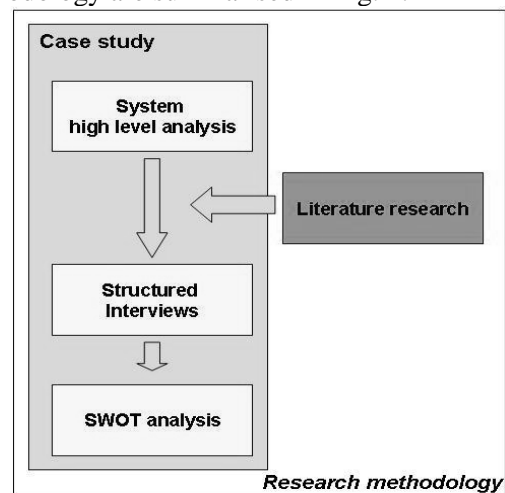


Fig.1: Steps of research methodology

In a more descriptive way the steps include:

1. A high level analysis was conducted concerning the transactions of the Pharmaclust and the relationships of its member.
2. An extensive literature review has been performed and enriched further the case study findings.
3. Structured interviews with the Pharmaclust members definitized both benefits and shortcomings of the cluster.
4. SWOT analysis was carried out and the results

can be used as a useful tool for future members in order to decide upon the participation in a collaborative cluster.

5 The (para)pharmaceutical case study

5.1 The (para)pharmaceutical supply chain

The (para)pharmaceutical industry in Greece consists of three basic entities [10] (Fig. 2):

- Drug/(Para)pharmaceutical manufacturing Companies.
- Wholesalers, who store and distribute products, acting as links between the (para)pharmaceutical manufacturing companies and the points of sales (either Pharmacies or Brand Pharmacies).
- All those stores that are allowed to sell drugs, namely Pharmacies and Brand Pharmacies.

the service provider, was formed and it was charged with the overall management and the maintenance of the collaborative cluster.

From a strategic point of view, the role of the service provider is to aggregate the needs of the pharmacies and negotiate with the suppliers ((para)pharmaceutical manufacturing companies and wholesalers), achieving economies of scale. In addition, the service provider developed and implemented a risk management tool, concerning both the physical and the electronic transactions of the (para)pharmaceutical supply chain. Fig. 2 maps the information technology systems and the supply chain transactions of the (para)pharmaceutical cluster.

5.2 Active (para)pharmaceutical cluster

The service provider has to implement its strategic objectives while operating in a living system. There are three basic dimensions of a system that have to be in line if the system is to function properly. These three dimensions are people, technology and processes [11]. Fig. 3 maps these dimensions based on Deming PDCA (plan, do, check, act) approach.

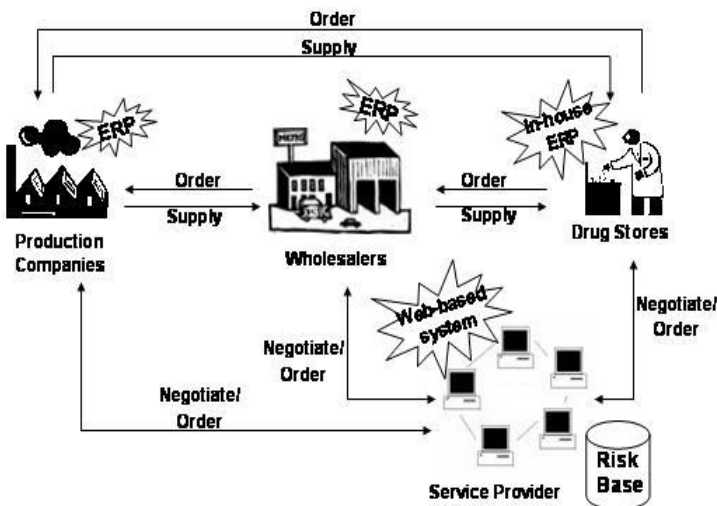


Fig.2: IT and transactions of the parapharmaceutical supply chain

In this supply chain, located in central and south Greece, one can make out two categories that sell (Drug/ (para)pharmaceutical manufacturing companies, Wholesalers) and three categories that buy (Wholesalers, Pharmacies, Brand Pharmacies). Pharmacies and Brand Pharmacies have the opportunity to buy either from a Wholesaler or the main vendor who is the Drug/ (para)pharmaceutical manufacturing Company. Lately, large foreign productions companies have made their appearance in Greece, threatening the viability of the local (para)pharmaceutical companies.

In order to stay competitive and avoid great loses, the members of the (para)pharmaceutical supply chain in Greece formed a cluster of strategic importance around advanced IT. In order to integrate their systems, they developed an e-business application called 'Pharmaclust'. A new company,

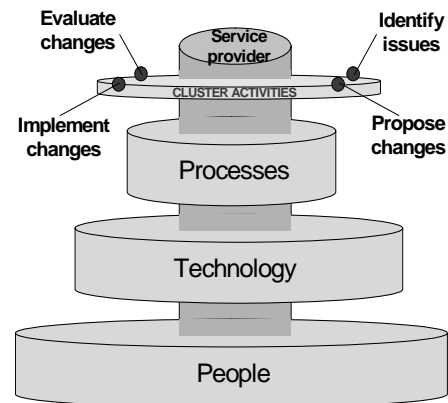


Fig. 3: Basic system's dimensions

The service provider has to support people belonging to the cluster by providing the appropriate technology and design efficient processes. However, its basic duty is to early identify any issues that could benefit or harm the cluster, propose appropriate actions to the members of the supply chain cluster, monitor their implementation and evaluate the results. The service provider facilitates the flow of ideas, the transfer of technology and accelerates the transactions among cluster members. These duties can be achieved by the service provider through cluster activities. The cluster activities might even turn out to processes. Some of the activities implemented in the Greek (para)pharmaceutical supply chain are described hereafter.

Purchasing activities

An important strategy of the collaborative cluster is the separation of the purchasing orders into two main categories, flow orders and negotiation orders. The former are placed directly and electronically to the wholesalers or the manufacturing companies, members of the cluster. Pharmacies are able to create an order in their ERP system, according to their inventory policy, which can then be uploaded to the supplier's ERP systems. The technological integration of the (para)pharmaceutical members and the unified coding system permit an easy and real-time exchange of information regarding orders' data, delivery times, invoicing and order tracking.

As far as it concerns the negotiation orders, they are managed and executed by the service provider, through a web-based application which allows the electronic submission by the following manner:

- Initially, the service provider forms and uploads the negotiation scenario on the web-based application.
- The pharmacies, members of the cluster, are then able to download the scenarios and import it them their ERPs, and form their order, which they uploaded on the web-based application, through a simple 'mouse click.
- As soon as the scenarios' time limit is reached, the service provider concentrates the orders placed by the pharmacies and creates an overall order, categorised by products codes and quantities.
- Then, the suppliers, members of the cluster, by using their personal username and password, enter the web-based application, download the overall order and submit their offer (discount on wholesale price) by uploading it on the web application.
- The service provider is then responsible to evaluate the offers and accept, decline or renegotiate. After holding a certain commission, the service provider shares the rest of the discount achieved to each pharmacy, accordingly to the volume of their order.

IT support activities

An advanced IT support is offered to the members of the collaborative cluster by the service provider. These activities include technical support, updates and upgrades, new modules or services and briefing about the release of new IT functionalities.

Promotion activities

The service provider is further charged with the creation of various promotional activities in order to enhance the marketing policy of the cluster's members. These activities include invitations of certified companies to visit the point of sales and

promote their products, exhibitions and media marketing and/ or direct mail activities.

Value-added activities

Aim of the service provider is, also, to improve the value chain by offering additional services in order to boost the performance of the pharmacists and achieve customers' satisfaction. These services include merchandising and training activities.

6 SWOT Analysis

The SWOT analysis is the process of analysing organisations and their environments based on their strengths, weaknesses, opportunities and threats [12]. This includes the environmental analysis, the process of scanning the business environment for threats and opportunities, which is considered as external factors, and the organisational analysis, the process of analysing a firm's strengths and weaknesses as internal factors [12]. SWOT analysis was carried out for the Pharmaclust and the results are summarised as follows:

Strengths

An important strength factor of the Pharmaclust is that allows access not only to specialised inputs and employees, but to information and technology, as well. Being part of a cluster, a company, is able to gain access to a deep and specialised supplier base. Sourcing locally instead from distant suppliers lowers transactions costs. In addition, it minimises the need for inventory and eliminates importing costs and delays. In addition, the close relationships developed among the Pharmaclust members foster trust and facilitates the flow of information. Moreover, clusters stimulate higher rates of new business formation, providing growth and long-term business dynamics. New companies grow up within an existing cluster rather than at isolated locations, as they lower their risks and can easier locate market opportunities. Further, the members of a cluster are able to perceive gaps and limitations of their industry in products and services and react vigorously by the formation of new businesses. The service provider of the Pharmaclust is a typical example as it was formed in the framework of the cluster. Developing clusters of competitive advantage is based on the simple concept that companies in similar or related industries can collectively achieve and gain much more by cooperating than if they act individually. In short, the strengths that stem from participating in the Pharmaclust are summarised as follows:

- Sharing and pooling resources

- Sharing business development and transactions costs
- A greater presence in the market
- More substantial marketing intelligence
- Greater security of data exchange
- Increased access to financial support
- Guidance from experienced companies
- An additional sales channel through access to electronic negotiation orders
- Improved Customer Relationship Management
- Increased Sales Efficiency
- Reduce cost of sale
- Reduce cost of supply chain transactions
- Purchase is carried out in a trusted environment, offering secure transactions
- Economies of scale by aggregating their needs
- Rapid detection of new verified suppliers
- One point of access to all Suppliers and products
- Better perspective of the market
- Development of new capabilities
- Formation of new businesses

Opportunities

Porter [6] states that many opportunities arise from complementarities which appear in many forms, as a host of linkages among cluster members results in a whole greater than the sum of its parts. A cluster frequently enhances the reputation of a particular industry, making it more likely that buyers will turn to a vendor based there. They also seem to realise their buying risk to be lower as, if one location provides several suppliers, they are able either to multisource or to switch vendors if the need arises. Further, clusters play a vital role in a company's ability to innovate as they increase its capacity by diffusing technological knowledge and innovation more rapidly. Companies inside clusters have a better perspective of the market than isolated competitors do and they are obliged to develop innovative strategies and built in the necessary capacities to implement them. Actually, clusters do more than make opportunities for innovation more visible. They also provide the capacity and the flexibility to act rapidly, as a member of the cluster can source what it needs to implement innovations [14]. In summary, the opportunities arise from the formation and the dynamics of the Pharmaclust are considered to be as follows:

- A better chance of securing larger contracts
- Access to wider market opportunities
- Faster and easier access to innovations
- Immediate notification for new products and practices
- Access to latest promotions available across a range of goods from different Suppliers

- Increased customer loyalty
- Share buying risk
- Better reputation
- Further performance improvement

Weaknesses

An important obstacle is that small enterprises have significant difficulties to fund the information technology due to basic revenue requirements needed to support a cluster initiative. There seems to be a critical mass that must be achieved before a firm reaches the right combination of financial resources, technical abilities and strategic direction to implement c-commerce practices. However, the specific circumstances existing in the case study of the Greek (para)pharmaceutical industry forced the major actors of the cluster (manufacturing companies and wholesalers) to assist the minor actors (pharmacies). As a result, the service provider managed to raise funds from the major players, as well as exploit European funding for small and very small enterprises.

Threats

Enterprise clusters and c-commerce practices are increasingly attracting the attention of sub-national and national policy makers because they represent efficient structures for stimulating the competitiveness, productivity and innovation of small enterprises [15]. In certain circumstances, however, clusters might become an obstacle to further development of their members. In a context of rapidly changing technology, cluster firms become more vulnerable if they are locked in old technologies and if they do not become flexible enough to adapt to those changes. On the other hand, considering the major challenges of clustering, culture is a strong contender. Culture often proves to be the stated reason for failure when adopting new technology. The last threat identified here is that when cluster firms rely on few buyers or on the activity of a limited number of companies, they may fail if these latter move or disappear, even if they themselves are still competitive. To avoid these pitfalls, a trusted and respected relationship with partners coupled with appropriate technology seems to be necessary.

7 Conclusion- Further Research

As a conclusion, one can state that clustering has enabled the Greek (para)pharmaceutical supply chain partners to overcome the threats appeared by the invasion of large production companies in the

local market. Although the collaborative cluster operates for only a year now, thus no absolute safe conclusions can be drawn, the initial outcomes are surely positive. The links of the supply chain have managed to develop close collaborations, around advanced technologies and remain competitive by adding value to their supply chain. In this framework, they are able to achieve economies of scale, take advantage of innovations and technologies, reduce transaction costs and exchange critical business information in a secure and reliable way. The SWOT analysis presented in the context of this paper is considered to be a useful tool not only for potential members of the Pharmaclust but also for the existing ones as well. By interpreting the combinations of the SWOT factors the Pharmaclust members are able to evaluate and improve their performance. Four combinations can be derived from the SWOT analysis [13]:

1. Maxi-maxi (S/O): this combination shows the cluster's strengths and opportunities. In essence, the cluster should strive to maximise its strengths to capitalise on new opportunities.
2. Maxi-mini (S/T): this combination shows the cluster's strengths in consideration of threats. In essence, the cluster should strive to use its strengths to parry or minimise threats.
3. Mini-maxi (W/O): this combination shows the cluster's weaknesses in tandem with opportunities. It is an exertion to conquer cluster's weaknesses by making the most of any new opportunities.
4. Mini-mini (W/T): this combination shows the cluster's weaknesses by comparison with the current threats. This is the most definitely defensive strategy, to minimise cluster's weaknesses and avoid threats.

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