

# Guidelines for Improving Supply Chain Management at Bulgarian Enterprises

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**Abstract:** The increasing degree of supply chain management application in the practice of leading foreign companies and the fact that nearly every business organization in Bulgaria has become a part of an international supply chain raise the importance of the concept for the Bulgarian enterprises. The article reveals the guidelines for improving supply chain management in the Bulgarian business on the basis of the best practices in the world and the specific characteristics of the concept application in our country. The suggested guidelines consider the structure of the supply chain, the key business processes in it, the relationships between its members and the integrative mechanisms in the areas of the management of the material, information flows and the flows of knowledge.

**Key words:** supply chain, integration practices, material flows, information flows, relationships.

**JEL:** M10.

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## Introduction

The importance of supply chain management (SCM) for business organizations is evident – the degree of application of this concept on the part of the enterprises all over the world increases and nearly every publication in the area of logistics and operations management concerns in some degree the theory and practice of SCM. SCM practices are mostly widespread amongst leading global companies and are a basic factor for the integration of their supply chains which include suppliers, plants, customers, and research and development centers that are globally dispersed. The number of Bulgarian enterprises participating in international supply chains also increases, which leads to the expectation that they should know SCM practices. Nevertheless, the application of these practices by the enterprises in Bulgaria is characterized by some specific features which are, in most cases, due to their dependence on the leaders in the corresponding chains, to the financial difficulties of Bulgarian enterprises and to the absence of trust between them. The aim of this article is to reveal the guidelines for improving SCM in Bulgarian business on the basis of the best practices in the world and the specific characteristics of the concept application in our country.

The proposed guidelines are based on a research of the degree of application of SCM in 151

enterprises in Bulgaria from which more than a half are producers and distributors of cosmetic and confectionary products.<sup>1</sup> The concept of SCM is examined in two aspects: integration of the activities between the company's functions and integration between the supply chain members. The inter-organizational integration is expressed in the interdependence and coordination between companies in the areas of the management of material, information and knowledge flows, as well as the relationship management.

## 1. Best practices in SCM

The literature research of the foreign experience in SCM (4, 2000, pp. 1-17; 7,

2000, pp. 67-83; 12, 2001, pp. 1-24; 14, 1998, pp. 630-650, etc.) resulted in the identification of the best practices in this area and in their classification in four groups corresponding to the four management areas in the external SC (table 1). In these groups the practices themselves are classified according to the eleven indicators used in the analysis and evaluation of the degree of application of the integrative mechanisms in the management of the external supply chain (SC). All organizations, even the most advanced that the research identified, can benefit from the comparison of their practice in the area of SCM against that of the others and if they have well developed capabilities for prioritizing, balancing and experimenting, they could transform their supply chains into powerful tool for increasing competitiveness.

*Table 1. Best practices in the management of the external supply chain*

<p><b>I. Material flows management</b></p> <p><b>1. Contents of communication</b></p> <p>Share information concerning not only delivery terms and prices, but also sales, inventories and costs.</p> <p>Share demand forecasts and promotional plans.</p> <p>Coordinate programs for customer service improvements and inventory reduction.</p> <p>Share production schedules and purchasing plans.</p> <p>Joint design of new products and sharing of plans for new product development.</p> <p>Joint activity planning. Share plans for further development and growth.</p> <p>Joint programs for quality improvement.</p> <p>Suppliers manage the inventories of incoming products.</p> <p>Part of the production is dedicated to a particular customer (with production schedules synchronized with those of the customer).</p> <p>Systematic distribution of the best practices among the main SC members.</p> <p>Inventories are carried at the least possible nodes in the chain.</p> <p>Production schedules are made in cooperation with suppliers and customers with minimum delivery time between the production systems.</p> <p>Locate production or warehouse facilities close to customers.</p> <p>Motivate suppliers to locate production or warehouse facilities close to yours.</p> <p><b>2. Supply base rationalization</b></p> <p>Classify suppliers and reduce their number.</p> <p>Choose suppliers on the basis of the evaluation of their capabilities and their relative ranking.</p> <p>Formal mechanisms for identifying the potential partners among the suppliers and defining the intensity of the relationship.</p>
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<sup>1</sup> For more details about the research methodology, used indicators and sample characteristics see Rakovska M., The Model of Application of Supply Chain Management in Bulgarian Business Practice, Economic Alternatives, No. 5 (82), 2007, pp. 62-76.

**3. Consistency of goals**

The goals of the organization are consistent with those of the supply chain in which it participates.  
 Formal efforts to achieve alignment of operating and strategic goals in the SC.  
 Formal efforts to share common mission, strategy and competitive weapons in the SC.  
 An information guide for the suppliers, in which expectations and benefits for them are formulated.

**4. Exchange and consistency of performance measures**

Share measures that reflect the performance of the whole chain.  
 Formal efforts to use consistent performance measures in the SC.  
 Common methodology for performance management.  
 Inform suppliers of the results of the suppliers audit in the form of measures.  
 Maintain accounts of income and profits from products, customers, channels.  
 Continuous comparison with best practices and involvement of suppliers and customers in the process.  
 Use specific measures for the customized products.  
 Use balanced scorecard for the assessment of the order management process.  
 Use and share measures to drive learning and improvement, not to "punish" poor performers.  
 Degree of feedback  
 Formal efforts to receive feedback from customers in the form of measures.  
 Measure the entire satisfaction of direct and final customers.  
 Measure the performance of suppliers and ensure feedback to suppliers concerning your satisfaction.

**II. Information flows management****1. Technologic capabilities for information sharing**

A policy to standardize the information systems across divisions and facilities.  
 Integration of the information systems with important suppliers and customers.  
 Use of information technologies to support centralization of decision-making.  
 WEB-based catalogues for all standard purchases.  
 Receive\Transmit orders electronically via EDI or web.  
 Point of sales systems.  
 Satellite systems for delivery tracing.  
 Create virtual medium with suppliers and customers for new product development.

**2. Methods for information sharing**

Electronic communication.  
 Team meetings to coordinate decision-making and joint planning.  
 Supplier's employees work at customer's site (for new product development, managing incoming flows, etc.).  
 Create joint teams for different product lines.  
 Create joint teams for the management of different processes (order fulfillment, new product development, etc.).  
 Create joint teams for the management of specific projects in the area of SCM (implementation of consistent information systems, development of consistent measures, etc.).  
 Periodically organize supplier conferences for defining expectations and sharing skills.

**3. Functions participating in the communication**

Participation of the personnel from most of the functional departments in the communication with customers and suppliers.  
 Create cross-functional teams for the management of the relationships with important customers and suppliers.  
 Managers dedicate considerable time to work with and visit customers and suppliers.

**III. Knowledge management**

Share technical information, technologies and know-how for new products development.  
 Share know-how for quality management, logistics, etc.  
 Share know-how for company management.  
 Train customers and suppliers.  
 Share long-term plans for the development and implementation of new technologies.  
 Suppliers of important components or production equipment participate in employees training.

**IV. Relationship management****1. Stability of relationships**

Use formal guidelines to create and control partner relationships.  
 Classify customers and form relationships on the basis of their importance.  
 Create database with customer profiles.  
 Long-term contracts with customers and suppliers.  
 Formal programs to educate customers on processes or the impact of their decisions on the rest of the SC.  
 Mutual problem solving with customers and suppliers.  
 Use of confidentiality agreement.  
 Help suppliers in product or process design.  
 Help suppliers to improve their capabilities for on-time deliveries.  
 Rules for aligning roles and responsibilities among partners.  
 A methodology for joint problem solving.  
 Financially support suppliers to dedicate production capacity for our needs.  
 A systematic approach to encourage efforts for cooperation and improvement.  
 Build trust and encourage frequent and open communication links.  
 Teams for relationship management and encouragement of interpersonal contacts.  
 A systematic approach to share risks and rewards in SC.  
 Use formal agreements for information sharing.  
 Use informal information sharing.

**2. Scope of relationship management.**

Efforts to understand the requirements of second and higher-tier customers.  
 Participate in customers' marketing decisions.  
 Maintain stable relationships with second-tier customers.  
 Participate in suppliers' supplying decisions.  
 Help second and third-tiers suppliers to improve performance.  
 Second-tier purchasing agreements to leverage global buying power.  
 Help customers and suppliers to solve problems with their customers and suppliers.

**2. Specific characteristics of SCM application in Bulgaria**

The research of the degree of application of SCM in the Bulgarian practice resulted in the identification of the following problems and peculiarities (1, 2004, pp. 215-227; 2, 2005, pp. 24-37; 3, 2007, pp. 62-76):

- Concerning the *internal integration*, prerequisites for the integration of material and information flows are discovered and they

are expressed in the creation of a logistics department in the organizational structure. The degree of this integration (measured with the number of logistics activities managed by the logistics department) is still quite low. The cooperation between the R&D department and the other functions in the production companies is still weak and this fact impedes the rapid development and introduction of new products.

- The absence of realized by the employees organizational goals and the inconsistent measures used by the different departments

lead to internal conflicts and inefficient usage of resources.

- *The communication between SC members* does not surpass the traditional information exchange related to sales, prices and delivery terms. The lack of ambition to increase the contents of communication through sharing of forecasts, promotional plans, inventory information, etc. can be explained with the distrust among SC members.
- A specific characteristic for the Bulgarian conditions is the focus on the forward integration with customers, which is expressed in the much more intense information sharing with them. The transfer of information to suppliers concerning forthcoming promotions, customer service improvement programs, sales, and demand forecasts, is neglected and this hinders the effective decision-making related to production schedules, delivery schedules and inventory levels.
- Very few are the companies that have aligned their goals with those of their important customers and suppliers and the lagging behind of the rest concerns suppliers again.
- The feedback is more developed. However, the fact that the development and exchange of consistent measures are some of the most neglected areas of SCM indicates that the contents of the realized feedback has mostly general dimensions and is not brought to the usage of quantitative measures.
- The information systems supporting the internal integration are not enough implemented in the Bulgarian practice and the reason pointed out is the lack of financial resources.
- Team meetings and the inter-organizational teams are rare phenomena and are still used basically for the coordination of promotions, customer service improvement and to a lesser degree for cooperative new product development and joint planning.
- In about 1/3 of the researched enterprises the interaction with the suppliers and customers is performed respectively by the buying and

selling organizational units – the others do not interact between each other.

- Knowledge of products, quality management, logistics and company management is practically not shared, which confirms the absence of trust among SC members.
- There is comparatively moderate relationship stability which is expressed in long-term agreements and in the allocation of responsibilities. On the other side, companies do not strive to widen the scope of their management efforts beyond the direct suppliers and customers.
- Companies participating in international supply chains (in which the producers of final products are foreign enterprises) apply in greater degree SCM practices compared to the participants in Bulgarian chains (in which the producers of final products are Bulgarian enterprises). Indeed, the complexity of global chains raises a number of challenges in front of companies, which require adequate defensive reactions. On the other side, the global character of operations and resources reveals many opportunities mostly in the direction of global optimization of costs and satisfaction of the requirements on a wider market. This is the reason why the leaders in these global supply chains are the best practitioners of SCM techniques and the rest of the members, including Bulgarian ones, borrow from their leading experience which improves the competitiveness of the chain as a whole.
- The model of application of SCM in Bulgaria is characterized by the simultaneous development of the integration of activities in the internal and external SC, in contrast to companies in the developed countries in which the internal integration precedes the external one. A possible explanation to this phenomenon is the fact that not a small part of the researched enterprises represents suppliers and customers of more powerful foreign companies which impose on them untraditional forms of cooperation before they have achieved a high degree of internal integration.

- The research proves that the higher degree of application of SCM contributes to the improvement of effectiveness and competitiveness. This determines the advisability of SCM application in practice.

### 3. Guidelines for improving SCM

No deliberately developed framework for planning and implementing SCM practices was found in the management of the researched

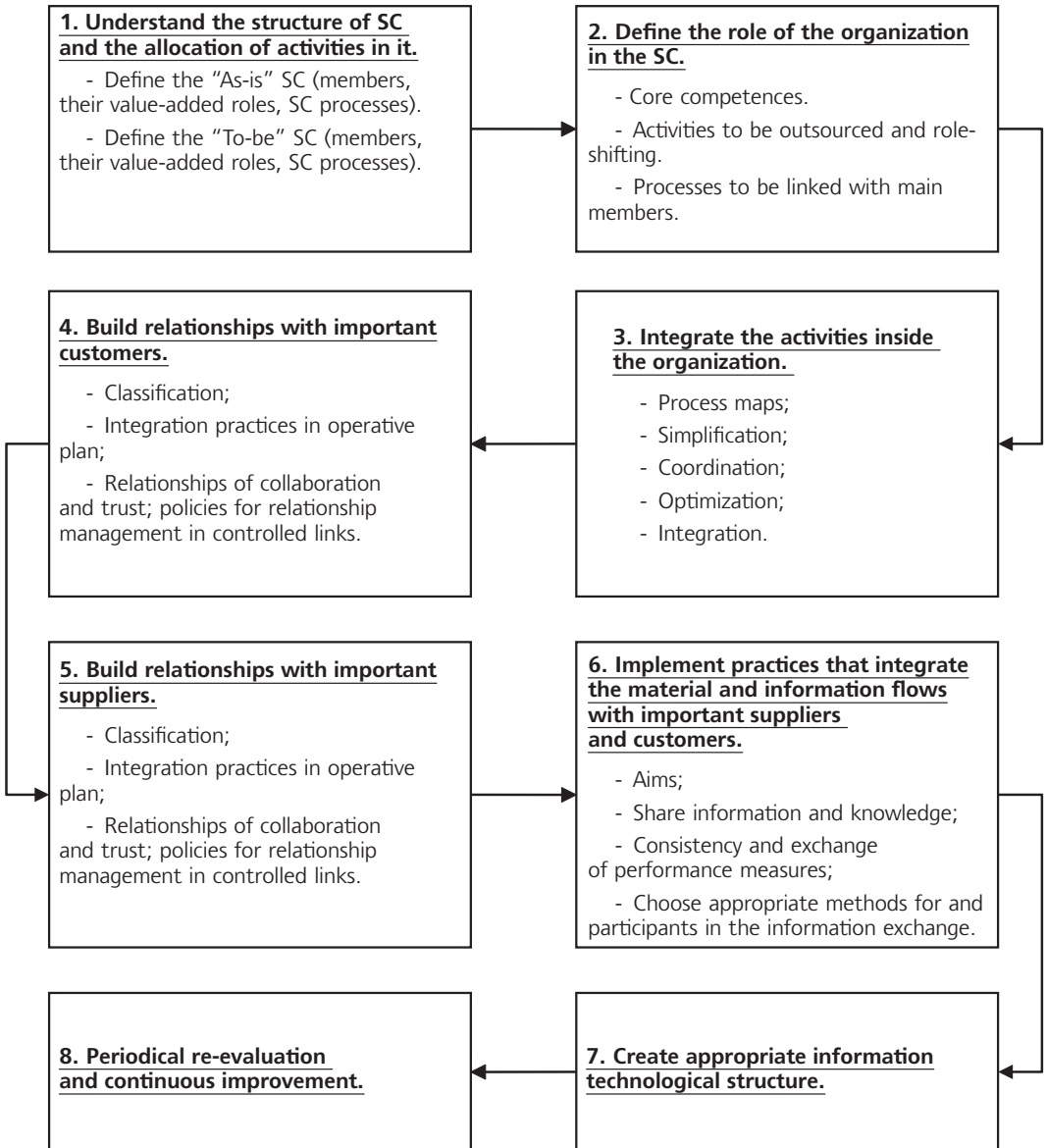


Figure 1. Guidelines for improving SCM.

companies. The proposed in this part of the article guidelines facilitate systematic efforts for the successful realization of the concept of SCM and are developed on the basis of the following:

- 1) The research of the literature and the foreign experience, which lead to the derivation of four interrelated elements necessary to be included in the guidelines for improving SCM – structure of the SC, key business processes in the SC, relationship between SC members and management integrative mechanisms (6, 2000, pp. 337-345; 8, 2001, pp. 101-106; 9, 2003; 10, 2002, pp. 24; 11, 2000, pp. 59-79; 13, 2001, pp. 418-434);
- 2) The assessment of the specific characteristics of SCM application in the Bulgarian business practice that revealed in the application of which practices the Bulgarian companies lag behind the foreign ones as well as the usual sequence in the usage of the specific integrative mechanisms;
- 3) The relationship between the application of SCM practices and company performance which helped the identification of those management mechanisms that exert greatest influence on concrete dimensions of competitiveness and effectiveness.

All that contributed to the development of adapted to the Bulgarian conditions guidelines for improvement of SCM, which include 8 stages (figure 1) and support the managers in the conceptualization of the road that their company should follow to realize better performance through the achievement of SC integration. The first two stages are related to the SC design and, although the indicated in them practices are not treated in the empirical research (as well as the last stage), their inclusion in the model is appropriate in respect to the provision of a systems approach and completeness of the proposed guidelines. The rest of the stages (from 3rd to 7th) relate to the integration and management of activities in SC.

### Stage 1. Understand the structure of SC and the allocation of activities in it.

Understanding the structural characteristics of the most critical for the organization SC is done via such management techniques like SC mapping and process flowcharts. Critical is that “supply chain, related processes, suppliers, and customers that offer the greatest potential for achieving a competitive advantage...” (10, 2002, pp. 40). First of all it is necessary to understand the current structure and allocation of activities. To achieve this aim it is possible to take an approach that consists of the following consecutive steps:

#### *1. Determine the main members of SC.*

For more complex supply chains in which it is not feasible to show all the participants, some aggregation into main types of members may be needed (8, 2001, pp. 101). It is recommended to reflect the internal SC, i.e. different functions, departments and individuals in the organization, which take place in or influence the value creation process. When defining the external SC structure, the number of its levels is reflected as well as the number of the participants on each level or the number of the types of participants in more complex supply chains.

#### *2. Determine the value proposed by the SC to final customers and the role of each member for its creation.*

The value proposed by the whole SC determines that competitive dimension which contributes to the success or failure of the chain in its current state and degree of integration. The formulation of the participants' contribution, and respectively their role in the chain, is done via detailed analysis of that part of their operations which increases the competitiveness concerning the chosen dimension. For example, if the competitive weapon for a product is

quality, then the analysis has to determine those organizations in the chain, which contribute to the greatest extent to the high quality or those ones that cause its deterioration. This analysis can be performed only if there is a willingness on the part of the organizations to submit the necessary information. Thus, managers can understand clearly the role of their organization in the SC, can re-evaluate adopted strategy or where in the chain the key success factor is situated and which participant has the leading role for its achievement.

*3. Determine the processes which contribute to the greatest extent to value adding and describe the activities in them through the creation of detailed process flowcharts.*

The most important business processes could be the following: customer relationship management, customer service management, demand management, order fulfillment, inventory management, procurement, new products development and market introduction, reverse flow management or other specific for the concrete organizations processes. In the description of the processes the activities in them should be determined with great reliability which necessitates the support of the other SC members. It is possible to include additional information like information flows, time requirements for activity fulfillment, moved distance, required resources, etc. The detailed process analysis allows the revelation of non-value-added activities or of the ones that are repeated by different individuals in the organization or by participants in the chain. In this way processes can be simplified and therefore costs for their fulfillment can be reduced.

The result at the end of this stage should be the identification of those SC members that have the greatest potential to contribute to the SCM success. There should also be a clear understanding of the necessity to make changes

in the proposed value and what should they be, as well as what roles should be played in the chain to provide the newly formulated value. The processes critical for its creation and provision to customers are respectively defined.

#### Stage 2. Define the role of the organization in the SC.

At this stage the activities performed by the organization are re-evaluated from a SC perspective in the following sequence:

1) *Identify the organization's competencies through evaluation of the fit between the value it proposes and the value that is required by the chain.* If there is a lack of fit the organization's participation in the SC is questionable and alternatives for its participation in more appropriate chains should be evaluated (8, 2001, pp. 103).

2) *Outsource the ineffective activities to organizations that are already a part of the chain or could be attracted to it as new members.* On this base role-shifting can be done via precise evaluation of the participants' competencies.

In this analysis it is necessary to adhere to one of the basic principals on the basis of which SCM contributes to the increase of competitiveness, namely the elimination of non-value-added activities. This can result in the reduction of value-added phases (for example, due to better communication and coordination raw materials or final products warehouses may appear to be unnecessary) or in the reconstruction of the chain as one or several phases are substituted for another, more effective one (for example, the traditional middlemen can be substituted for new ones: logistics or information technological organizations). The elimination of non-value-added activities results in the minimization of non-value-added time. The increase or reduction of the number of the suppliers or customers



will influence the SC structure which may become longer or wide (shorter or narrower respectively).

3) *Determine the processes to be linked with the main participants*, more concretely, which internal processes can enlarge its scope across the whole chain through the integration of the activities that are parts of the process on both sides of the link. It is this integration between the activities that is the basic tool for the functioning of the SC as a whole. The number of the processes subject to integration is not defined. In some cases it may be appropriate to link only one process and in other cases to link several or all of the key business processes.

Stage 3. Integrate the activities performed by the different functional areas in the organization.

The conducted research revealed that the achievement of a high internal integration positively influence the price and quality of products and ROA too. Therefore, organizations that strive to good performance in these directions should integrate a greater number of logistics activities, invest in information technologies and systems giving the opportunity for higher degree integration, and ensure the contribution of all company's management areas to quality improvement and cost reduction through synchronization of goals and performance measures and better coordination as well. A helpful tool for determining integration priorities is the adherence to the following guidelines:

1) *Develop process maps for the processes in the organization.*

2) *Simplify processes through elimination of unnecessary or repeated activities in the organization.* It is useful to create cross-functional teams which adopt a broader system approach in problem solving.

3) *Create conditions for coordination of material flows management activities between separate organizational units and formulate consistent goals and measures.* The research proved the importance of this practice for such competitive dimensions as price, quality, speed and reliability of deliveries, customer service, and this makes necessary its practical application. The inter-relations between company management areas reflect the need to coordinate activities connected with the realization of materials flows. For example, the in-time delivery for the final customer in the production by order is often dependant on the perfect coordination of the activities between almost all management areas. The capability to coordinate inter-relations can decrease costs and creates opportunities for differentiation.

4) *The requirement for activities coordination is necessary for the economic optimization of the consecutive activities with the aim to reflect the influence of the interrelations between them on the performance of the organization as a whole.* It is appropriate to adopt the system approach which is the base of the logistics costs analysis and the concept of logistics costs trade-off. The grouping of logistics activities in a separate organizational unit facilitates greatly the application of the system approach.

5) *The integration of the logistics activities is carried out through the coordination and optimization with the aim to achieve the least waste of time and resources and to increase customersatisfaction.* The integration on company level can be reached, as it was underlined, only if the functional areas of company management have synchronized goals and strategies, consistent performance measures and common understanding of the organization's mission and strategic goals. The integration needs also to be based on the principal of continuous improvement with the final aim to eliminate waste of time and resources and to achieve ideal synchronization between activities.

#### Stage 4. Build appropriate relationships with important customers.

A typical organization can have many relationships with customers and suppliers and it is impossible all of them to participate in SC integration. It was discovered that the researched organizations start the integration efforts first of all with customers. Building appropriate relationships firstly with customers is reasonable, at least from a marketing perspective, and can be achieved through the following steps:

1) *Classify customers on the basis of their relative importance to the long-term success of the company.* It is not possible to provide equally high levels of value or customized ones for all customers. The previous stages are to help managers define the customers that deserve to be satisfied in the highest extent, the products or services they require, the value to be created by the company and the rest of the SC members. Aligning the company's core competencies with the most important customers' critical success factors is vital to achieving SC integration (8, 2001, pp. 103).

2) *Implement some integrative practices firstly in operative plan.* This appeared to be a preferred by the researched organization approach. These practices are connected with the determination of consistent operative goals and the respective activities that should be carried out to achieve these goals. The activities can be directed, for example, to shortening the time for administrative order processing, improving the timeliness and reliability of deliveries through joint re-evaluation of the carrier, elimination of unnecessary or repeated activities in dispatching or accepting the delivery on both sides of the link. The aim here is to test some integrative practices which can be implemented without considerable risk and resources and at the same time create prerequisites for building trust and strengthening the links between organizations –

a necessary condition for implementing the integrative mechanisms, characterizing the later phases of the cooperation.

3) *Develop stable and effective relationships with customers,* otherwise the efforts to manage material and information flows would be without result. As it was proved in the research, building relationships of trust and cooperation positively influences the speed and reliability of deliveries, flexibility and customer service. In this line, the practical application of the concept of Customer Relationship Management (CRM) is of considerable importance. It directs the attention of organizations towards the important customers that should receive the highest value. In this way they become preferred customers with allowed access to technological resources, materials in periods of shortage and so on.

4) *For comparatively important customers with which it is not advisable to share resources and knowledge, stable relationships of mutual benefit are appropriate to be maintained.* Fawset S. and Magnan G. state that here the goal is to achieve high levels of satisfaction by meeting their most important needs (8, 2001, pp.103). Over time, some of them may become leaders in their markets and therefore the most valued customers.

5) *Establish policies to effectively service the relationships with customers whose purchases are infrequent and in too small volumes.* The goal is to achieve high levels of standardized service (8, 2001, pp.103). Although these customers are often viewed as insignificant, they can be quite profitable as a group and some of them may later become leaders in the industry.

#### Stage 5. Build appropriate relationships with important suppliers.

It is possible that the integration with suppliers precedes the one with customers especially

in cases when the organization has long-term relationships with some of them. Then such concepts as “just in time” and “vendor managed inventory” can quickly be implemented among these suppliers. The pattern that should be followed is the same as with customers:

1) *Classify suppliers.* The most critical suppliers are the ones with relatively greatest importance for the performance of the chain as a whole. This means clear understanding of the suppliers’ performance measured with appropriate indicators (quality, deliveries, technology, and potential for growth). This evaluation is a basic factor for determining the type of the relationships to be developed.

2) *As with customers here it is advisable to implement integrative practices firstly in operative plan* with the aim to develop trust between organizations. Trust is the main driver in the cooperative relationships, mainly the informal ones. The informal cooperation often starts and develops between people who directly take part in the activities to be linked in an operative plan on the basis of their personal contacts. The development of trust means that both parties are ready to take actions exceeding the partner’s expectations such as, for example, quality improvement, treatment as a preferred supplier or help if necessary.

3) *Use a proactive approach for the improvement of relationships with the most important suppliers.* It brings a number of advantages concerning not only the reduction of material costs but also the improvement of flexibility and speed of deliveries. What’s more, the suppliers can turn into an important source for innovation and original ideas, which justifies their inclusion in the process of new product development in the early stages of the design. The achievement of synergy with critical suppliers is based on long-term strategic decisions focused on strategies synchronization for maximum usage of their specific knowledge.

The relationships based on trust turn into an intangible advantage and their management adds a specific touch to SCM besides its consideration from pure logistical point of view. The establishment of stable inter-organizational cooperative relationships influences the application of the mechanisms for integrative management of material and information flows in the SC, because it is a prerequisite for information sharing, development of plans for production and delivery, joint new products design and restructuring of activities.

4) *Establish efficient policies with valued but not critical suppliers.* They may develop new technologies and processes that radically change the power relationship in the SC or the source of its competitiveness. The maintenance of appropriate relationships with the rest of the suppliers is an important capability that should be developed, because their contribution, even if small, is an inseparable part of the value creation process in the SC.

#### Stage 6. Implement practices which integrate material and information flows.

At this stage the stress falls entirely on the management of the effective integration. The evaluation of the relationship between SCM and the performance of the researched organizations revealed that competitive dimensions such as delivery, flexibility and service depend much more on the collaborative efforts of the SC members than on the pure internal company’s capabilities. What’s more, it was proved that enterprises can achieve improvement of ROA if they broaden the management of material and information flows out of the company’s boundaries and build cooperative relationships not only with their direct suppliers and customers but also with those on the second and higher levels. That is why, organizations that strive to develop capabilities for the provision of in-time and reliable deliveries, high customer service and

greater flexibility, and to increase ROA, should apply the best practices for external integration. It is recommended before the implementation of the integrative mechanisms to determine the internal and external factors which hinder it and afterwards to seek opportunities for improvement. The developed specific programs have to be implemented first as pilot projects with those main suppliers and customers with whom there is already established trust. These mechanisms are advisable to be applied considering the following recommendations:

1) *The SC integration should begin with the determination of a common vision of the SC mission and the formulation of consistent goals to direct and motivate the integrative behavior.* The formation of this vision should be based on the understanding of the proposed value to customers. The mission and goals are defined on the highest management levels in SC organizations but they should be brought to the knowledge of all employees and be reflected in everyone's concrete responsibilities. The popularization of the mission and goals is necessary to affect the employees of all main SC organizations which participate in the integrative efforts.

2) *Increase the frequency of communication with important customers and suppliers and broaden the content of the shared information.* The research underlined the unconditional importance of the characteristics of the shared information for SC integration and its members' performance. Organizations can share different types of production and forecast data including product-level and part-level material requirements planning schedules, as well as demand information. All that facilitates the planning of capacity, inventory requirements and human resources. Cost data may also be shared to identify non-value-added cost drivers (such as scrap, excess inventory, re-work, etc.), which can be reduced through joint efforts (10, 2002, pp. 17).

Here it is necessary to emphasize that the links between activities carried out by the different SC members are developed not only through the process of information and knowledge sharing, but also through the process of adaptation which includes logistics, technical and administrative elements as well as the personal relationships between individuals. The adaptation process strengthens the links between parties and can include modification of products, of logistics technology (transport, material handling, packaging, labeling, etc.), of administrative systems and production processes with the aim to achieve more efficient usage of resources. Managers, logisticians and engineers from supplying organizations may visit customer facilities to address possible improvements in products or processes that can lead to faster material flows or reduced costs connected with their movement. Organizations should re-evaluate common activities such as inventory management and order processing. The following questions have to be answered: where should inventories be allocated; which are the appropriate levels of inventories, and which SC participants have the competences to manage them.

3) *Use and share consistent performance measures which guarantee that all participants act towards the formulated goals.* This practice exerts greatest influence on the speed and reliability of deliveries in the researched organizations. Apparently, in order to achieve these time advantages, management decisions should rest on objective performance information which should be shared with the main SC partners. In the ideal case this information should cover all areas that can be quantitatively measured as, for example, inventory levels, time for carrying out activities that are parts of a process, customer service levels, sales, market share, costs, quality, etc. The well developed measures form a base for SC understanding, influence the management decisions in it and provide

information about the results of SC members' joint efforts. The concept of SCM requires the performance measurement of the chain as a whole as a result of the integrative efforts rather than the separate measurement of its members' performance (5, 2000, pp. 75-94). This includes the evaluation of a broad scope of phenomena indicative of the entire SC performance as, for example, the measurement of: changes of the average inventory levels and inventory turnover in the chain; time for new product development and introduction; share of right orders; cash-to-cash cycle; time for SC reaction to fluctuations in demand; total SC costs; SC capability to react to urgent final customers' needs and to adapt to demand changes and so on. These measures, as it can be seen, are directed towards the key business processes and require the adoption of a process-oriented management approach and a higher degree of information sharing as well.

4) *Use appropriate methods for communication and include more participants in the information sharing for SC integration.* Bulgarian organizations which apply these two practices are notable for higher flexibility, speed and reliability of deliveries and improved ROA. That is why, enterprises striving to reach improvements in these areas should use such communication methods as organizing workshops in which participants' plans are revealed, meetings between employees on all organizational levels and from all functions, and establishing joint teams for products and processes. It is possible to conduct regular meetings of SC councils which include representatives from all SC members. They aim to seek and implement changes in policies and information systems, which could reduce SC costs and eliminate non-value-added activities. The formation of cross-functional and inter-organizational teams for the management of a process or a project is one of the most frequently used tools for SCM in developed countries.

#### Stage 7. Create appropriate information and technological structure.

It was discovered that the investment in information systems integrating the internal activities positively influences all dimensions of performance, and investment in compatible for SC members information technologies works in favour of flexibility, market share, profit and ROA. Information technologies and systems automate processes, support management decision-making, and eliminate the increase of time for process fulfillment connected with the lack of appropriate information. The use of information technologies in communication allows the representatives of different functions and organizations to participate mutually in the coordination of operations and problem solving.

The information systems deployed in the organization and across the SC partners is the last element of SC integration. Only after the clear definition of structure, processes, relationships with main partners, and the applied integrative mechanisms, companies can pay attention to the choice, implementation and use of the appropriate information technologies. Since they are a tool for the achievement of integration, the main goal is to use them in support of the business processes which have already been improved (10, 2002, pp. 27).

Since many alternatives exist such as standardized software applications as well as customized ones, their analysis and choice should be based on the requirements imposed by processes and participants' needs. It is possible to choose software applications for SC information exchange developed by specialized information technological companies and applications proposed by the main suppliers of ERP systems (SAP, Oracle and others). Most companies in the foreign practice that seek information transparency in the chain buy

such specialized software systems and build long-term relationships with their suppliers. Pilot projects in this area are a way to realize improvements for relatively short time, to test some technologies, and to avoid the risk of failure in the implementation of large scale projects.

#### Stage 8. Periodical re-evaluation and continuous improvement.

SCM require rapid adaptation to the dynamics of the competitive conditions because unexpected changes in the environment can impose re-evaluation of the current partnerships, some of which can appear to be suboptimal in relation to the new conditions and this can lead to structural changes in the chain. To ensure that flexibility the following steps are necessary to be taken (8, 2001, pp. 104):

1) *Formalized periodic environmental, technology, and industry scans.* These scans can include benchmarking against SCM leaders, re-evaluation of SC alternatives and balancing the short-term and long-term organization's interests with those of the most important customers and suppliers.

2) *A pursuit of continuous improvement which must unleash the creativity of all SC participants.* This can be reached, for example, through formalized programs which on one side must encourage the teamwork in SC processes management, and on the other side, to reveal opportunities and motivation for the satisfaction of team members' specific interests. In line with the concept of total quality management which is consistent with SCM, the necessity of continuous improvement should develop in the consciousness of all participants in the value creation because there are always opportunities for improvement that can lead to greater integration.

## Conclusion

The proposed guidelines for SCM improvement contain concepts that are broad and general because each supply chain is unique and connected with different opportunities, challenges and potential conflicts. Although most of the concepts look to be apparent, they are not always easily applicable, but anyway, they represent an acceptable set of basic rules for SCM application which provide a supporting point for each organization intending to take a strategic initiative in this direction. It must be ready to cooperate, to improve relationships and to solve problems with its partners. The guidelines could help managers to choose partners and manage the chain in a way to increase its competitiveness, because they are based on the proved fact that SC integration leads to better performance of organizations.

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