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THE SUPPLY CHAIN DESIGN AND ITS IMPLEMENTATION. AN ANALITICAL AND MULTISECTORIAL APPROACH

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ABSTRACT

The paper presents the preliminary results of a project undertaken by authors with the aim to determine how the complexity and uncertainty of markets can condition the design of the supply chains, and how some companies can adopt both suitable internal organizational structures (departments involved, level of coordination among them,…) and partners relationships in supply chain management that allow them not only to improve their competitiveness but also improve their leadership in the markets. To do so, in-depth compared analysis of the logistics function and the supply chains in 33 Spanish companies (all of them significant companies in the European markets and in some cases worldwide) of four different sectors (food, fashion clothing, kitchen furniture and stone) is carried out. The methodology used for collecting data is a structured questionnaire in personal interviews with the companies involved.

Keywords: Logistics, supply chain, Integration

1. LOGISTICS AND SUPPLY CHAIN MANAGEMENT

Nowadays, the market in which companies develop their activity is characterized by an increasing demand, calling for a wider range of products, with good quality, a low profit margin and a high level of service (Bolwijn and Kumpe, 1998; Brown & Eisenhardt, 1998). In this context, logistics and SCM (Supply Chain Management) have become a key, strategic function in companies in achieving competitive advantages since a correct management of the same contributes to cutting down on costs and increasing the level of service. Christopher (1992) defines the supply chain as "... a network of organizations that are interconnected, through upstream and downstream links, in the different business processes and activities that produce value in the shape of products and services to clients." This approach by Christopher coincides with that later pointed out by Mentzer et al., (2001) and Stock and Lambert (2001). The operation of an appropriate and effective supply chain is now a vital part of competitive performance in all types of markets (Subramani, 2004).

Excluding certain nuances that can lead to debate on the equivalence or otherwise of the supply chain and logistics in the purely conceptual field (Larson and Halldorsson, 2004), a broader view reveals a similar approach to that of logistics in supply chain management, this being the approach taken in this paper. So as far as the authors are concerned, logistics is the "coordinated management of flows of materials and information, from the supply stage to distribution, covering production and "out of use" product management ("reverse logistics") at each stage of the trade process". Along these lines, the concept of "supply chain" responds to the need in all organizations to provide an efficient response to market demands in order to carry out actions aimed at an improved coordination of flows with the other companies involved in the logistics process, particularly the suppliers and customers.

Recently there have been many studies on the supply chain. Sachan and Datta (2005) conducted an analysis of 442 articles, recently published by various academic magazines on issues related to logistics management or supply chain management; this study demonstrated that in the scientific

literature there has been both an increase in research based on case studies and a tendency towards applied research aimed at creating management models for subsequent validation in the business world, conclusions which basically coincide with those of the evolutionary study of supply chains conducted by Meixell and Gargeya (2005) from a review of 100 scientific articles. In this way, the research by Sachan and Datta reveals the lack of interdisciplinary studies between different sectors and different supply chains, aspects which have suggested some aspects found in this paper.

2. AGILE AND LEAN APPROACH IN SUPPLY CHAIN MANAGEMENT

Companies, in the competitive context commented in the previous section, must face the challenges of new product innovations, decreasing product lifecycles, product proliferation, lower prices demands and higher quality and service standards. This has resulted in markets that can be characterised as increasingly turbulent and volatile (Brown & Eisenhardt, 1998) and has caused many organisations to seek to improve their supply chain management.

Nowadays, most supply chain management activities have sought to remove or reduce the uncertainty within a supply chain as far as possible, in order to facilitate a more predictable response to changes in downstream demand (Mason-Jones, Naylor, & Towill, 2000; Christopher and Towill, 2000). However, in many underlying markets it is becoming impossible to remove or ignore sources of turbulence and volatility (uncertainty). Recognising that market turbulence is unlikely to abate, developing an agile supply chain is now a major focus of many leading organisations (Fisher, 1997). Thus, in recent years many papers have treated supply chain designs around the relative merits of “lean” and “agile” philosophies. The idea of “lean thinking” has been expounded by Womack and Jones (1996) amongst others. The focus of lean thinking has been on the reduction or elimination of waste and its origins can be traced to the Toyota Production System (Ohno, 1988) with the JIT (Just in Time) philosophy. Later, JIT approach was renewed and improved by “lean management” or “lean manufacturing” concept (Womack and Jones, 1996).

The concept of “agility” talks about the ability to match supply and demand in turbulent and unpredictable markets. In essence, it is about being demand-driven rather than forecast-driven. Agility is a business-wide capability that embraces organisational structures, logistics processes and, in particular, mind-sets (Christopher, 2002). Other approaches related to agile philosophy are QR (Quick Response, launched in the American textile sector to improve the level of service given to customers, in 1984) or ECR (Efficient Consumer Response; Salmon, 1996), which set out to provide strategies for improving efficiency in processes and improving quality, service and costs offered to the market.

A key characteristic of an agile organisation is flexibility (for example in terms of reconfigurability, modularity, standardization or versatility; Shaw et al., 2005). Indeed, the origins of agility as a business concept lie in flexible manufacturing systems. Later this idea of manufacturing flexibility was extended into the wider business context (Nagel and Dove, 1991) and, particularly in the supply chain management. Towill and Christopher (2002, based on Goldman et al., 1995) summarises agility features along six complementary dimensions of: marketing, production, design, organisation, management and people.

Likewise, from the agile viewpoint (Christopher, 2000; Vázquez-Bustelo and Avella, 2005), companies should apply coordination and cooperation strategies with suppliers and customers, concurrent engineering in developing new products, the use of advanced technologies in the design, planning and control of the supply chain and appropriate management of know-how (via continuous improvement, team work, a standardized work procedure and a flexible organizational structure).

3. KEY FACTORS IN SUPPLY CHAIN MANAGEMENT

Two approaches (agile and lean) commented previously, can complement each other, and in many cases there is a requirement for a “hybrid” lean/agile strategy to be adopted (Christopher and Towill, 2000). In some cases, the two ideas of lean and agile can be brought together as a hybrid

"leagile" solution (Naylor et al., 1999). Thus, some classification schemes have been proposed in the literature to guide the choice of supply chain strategy (Fisher, 1997; Childerhouse, 2002) and many authors have identified some key factors that can orientate the selection of the best approach. In this section these key factors are presented and discussed.

Christopher (2000), comments that some characteristics of the market that recommend the agile supply chain approach are short cycle times, wide variety of product and unpredictable demand, while markets characterized by no innovation in products, limited variety of products and demand with less uncertainty (more or less stable) probably ask for lean supply chains.

In this context, Vonderembse et al. (2006) discuss supply chain types that are necessary for success across three types of products: standard, innovative, and hybrid. It develops a framework for categorizing the supply chain types (lean supply chain, agile supply chain and hybrid supply chain) according to product characteristics and stage of the product life cycle (introduction, growth, maturity, decline). The key success factor for a product change as the product moves through its life cycle, and this may require different supply chain characteristics and capabilities, specially, in the category of innovative production that supply chain evolves from agile focus (in the stages of introduction and growth) to lean focus (in the stages of maturity and decline).

Going into further analysis with this point of view, Christopher et al. (2006) believe that lead-time must be included in any useful classification of supply chains. Thus, these authors suggest a simple three-dimensional classification appropriate for global supply chains. The dimensions and their binary gradations are: products (standard or special), demand (stable or volatile) and replenishment lead-times (short or long). What makes a product "special" is probably that it is either low volume with erratic demand or it is a product with a probable short life cycle or, probably, a product with a high level of customization. "Standard" products, on the other hand, will tend to be more stable in demand with longer life cycles with no, or limited, customization.

Because predictability and product type will tend to be related, i.e. standard products will be more predictable (at least, over longer periods), it is possible to simplify the taxonomy into just two dimensions: predictability and replenishment lead-times. In those situations where demand is predictable and replenishment lead-times are short then a "continuous replenishment" strategy may be appropriate.

At the other extreme (unpredictable demand and long lead-times) the ideal solution is to carry strategic inventory in some generic form and assemble/configure/distribute as required when actual demand is encountered. This is the classic "postponement" or "decoupling point" concept (Naylor et al., 1999; Lowson, 2002). Upstream of this decoupling point, the processes are designed to maximise efficiencies through standardisation and economies of scale (lean approach) while, downstream, the processes are designed to be highly responsive to actual demand (agile approach). Likewise, the tactics adopted may also be influenced by whether the product is "standard" or "special". For example, in the "postponement" alternative, for a special product we may postpone manufacture, but for a standard product it may be better to postpone distribution (Pagh and Cooper, 1998).

If lead-times are long but demand is predictable, then there is opportunity for the pursuit of "lean" type strategies, e.g. make or source ahead of demand in the most efficient way. Finally, when demand is unpredictable but lead-times are short, then agile solutions will be required based upon rapid response.

Likewise, in terms of combining space and time concepts, there are in theory four different combinations of the "lean" and "agile" paradigms. If using "lean" and "agile" principles at the same time in the same space is invalid, this leaves three practical combinations to be explored (Christopher and Towill, 2002). These alternatives are: same time and different space, same space and different time and, finally, different space and different time.

Same time and different space alternative suggests the opportunity for running separate supply chain processes in parallel. The products with more volume in sells tend to be more predictable and hence may lend themselves to “lean” treatment, i.e. produced and distributed by the lowest cost and most “efficient” processes. On the other hand, the products with less volume in sells tend to be less predictable, which recommend a more agile approach.

On the other hand, same space and different time alternative suggests that a proportion of total expected demand is made or sourced ahead of the time that demand is forecast to occur. So, total demand for a product can be separated as “base” and “surge” demand. Base demand is more predictable and less risky so lean principles can be applied, using agile approaches to cope with surge demand (p.e., outsourcing or use of network of flexible partners). Finally, different space and different time alternative indicates the opportunity for “decoupling” the supply chain through the concept of “postponement” or a “leagile” supply chain.

In this context, agile supply chains have been characterised as: utilising virtual teams (Bal et al., 1999); having time compressed business processes (Mason-Jones & Towill, 1999); communicating real-time market data via information systems to all parties in the supply chain (Christopher & Towill, 2002b); making use of contract manufacturers (Mason, Cole, Ulrey, & Yan, 2002); being responsive to changes in throughput, destinations and volumes (Huang, Uppal, & Shi, 2002;Prater, Biehl, & Smith, 2001); and the use of de-coupling and postponement points (Mason-Jones et al., 2000; van Hoek, 2000).

In summary, aspects such as the variety and type of products, the predictability of demand, the product life cycle and the lead times condition the supply chain design. Thus, a suitable selection of agile or lean approach in every part of the supply chain affects positively to its global efficiency.

4. PROPOSAL OF A FRAMEWORK

The last aspects commented in the previous paragraph must be explained in further detail (see figure 1). Thus, thanks to the knowledge of market needs (quality, service, price, innovation, variety,…), of demand configuration (stable or volatile) in every market segment, of the environment characteristics (competitors, entrance barriers, legislation, replaced products,…), companies select their competitive strategy. Porter (1982) identified three generic strategies: differentiation (p.e. in service, quality or innovation), minimum costs and concentration in one specific segment of the market.

Till this strategy definition, companies select "marketing mix" issues, including decisions of product design (type of product, variety of products, level of customization,…), the service level or the channel (or channels) of commercialization. Regarding to this definition of "marketing mix" it is connected the suitable supply chain design for adapting to market needs; thus, it is necessary to deal with decisions such us, making or buying the product (total or partially), the application of postponement policies, the factories and warehouses network, the logistic organization in factories and warehouses, the logistics technologies, the system of transport or the logistics information system.

One important issue in this process it is the simultaneous action of "marketing mix" definition and supply chain design that must allow to improve efficiency, not only in production (the traditional vision of simultaneous engineering), but also in supplies and physical distribution. This, this efficiency must be measured in terms of what is the most suitable approach (lean, agile or leagile) in every step of supply chain supported, in some cases, by postponement strategies.

However, due to the complexity of this selection process, much more in global and uncertain markets and with shorter product life cycle, is necessary to propose simplifications of the model that makes possible its rationalization. Thus, one way of simplifying the problem could be the

measurement of the impact of every step of supply chain (supplies, production, physical distribution) over lead times and costs. For instance, if the production step has a higher impact over total costs more than over global lead time, the lean approach can be the best solution. By the contrary, if supplies have the higher impact over global lead times more than over total costs, agile approach could be the most interesting one. However these last statements must be adjusted with the relative importance of low lead times and low costs from a strategic point of view.

A study carried out by ELA (European Logistics Association) and the consultant A.T. Kearney (Excellence in Logistics) in 2004 shows that in the current environment with global supply chains, with high level of uncertainty, with more complex products and with more demanding clients, there are three key aspects in SCM: the differentiation of supply chains for adapting to the specific requirements of clients and suppliers (applying lean or agile concepts selectively in every part of de supply chain and combining with postponement strategies), the collaboration among partners throughout supply chain and, finally, the optimization of the supply chain as a whole (both internally and externally) in order to reduce uncertainty and to increase efficiency (including an efficient new product design).

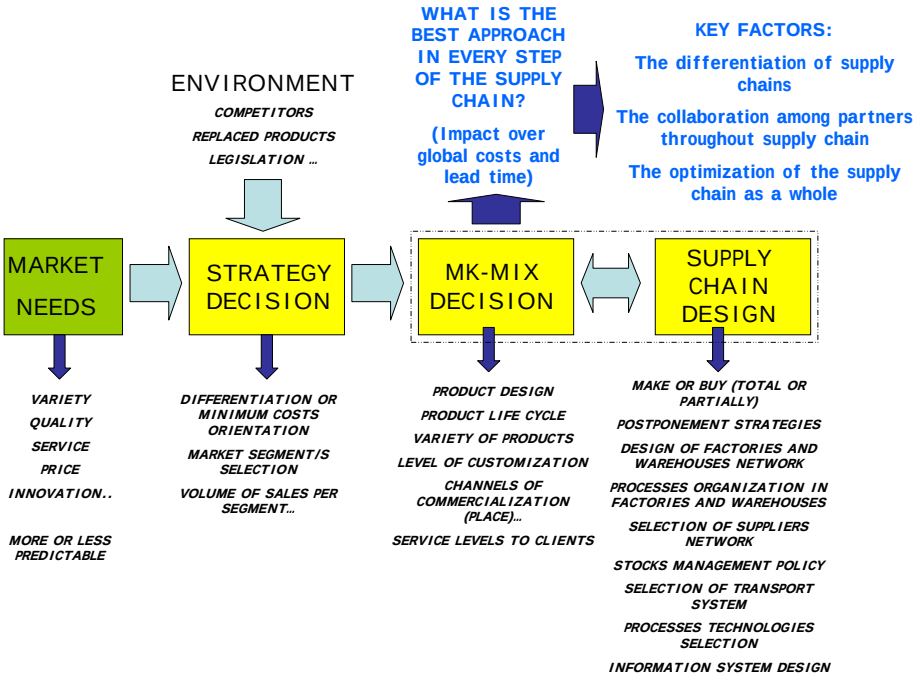

Figure 1. Methodology for supply chain design

4. MULTISECTORIAL STUDY IN SUPPLY CHAIN MANAGEMENT

As regards the management model for the supply chain developed above, the objective of the investigation proposed by the authors was to identify the main characteristics of the design and management of the supply chain in a group of companies belonging to different sectors, paying special attention to their differences and needs according.

Since dealing with the study for all companies and sectors would be a colossal task, it has been limited to a given area and sector, focusing the study on Galician companies (northwest Spain) in four of the most important sectors in its economy, namely: the food sector (frozen fish product and canned fish products), the fashion sector, the kitchen furniture manufacturers and stone (granite processing). In most of these sectors, these companies are reference points, not only in Spain but also worldwide. This study is part of a broader multi-sector work carried out by the authors, funded by the Regional Government of Galicia's Department of Innovation and Industry.

In order to achieve the objectives of the study, the basic technique for collecting data was the personal interviews in companies aided by a structured questionnaire (with open and close questions). In the close questions, the Likert evaluation scale was used (1-minimum to 5-maximum) or by marking the squares where relevant, seeking not only to make answering easy for those polled, but also to facilitate later statistical processing of the questionnaire. Also, in order to compile the clarifications of the companies surveyed, a fair part of the closed questions also includes open options.

Once the questionnaires were designed and validated, fieldwork commenced. In the personal interviews, the following guidelines were applied. After an initial contact by telephone with the logistics or production director (or, in their absence, with someone responsible related to the area, often the manager), an interview was set up at the company facilities to fill in the questionnaire. These personal interviews lasted for a minimum of one hour and a maximum of three.

Within the food sector, the 13 most representative companies in the frozen fish product sector (7) were selected and fish canned product companies (6) with a turnover higher than 25 million euros. The response rate has been, respectively, 63% and 60% out of the total universe considered. On the other hand, as regards the fashion sector, 9 companies in the fashion industry were selected, with a turnover higher than 5 million euros. Response rate in terms of the universe considered was 82%.

As regards the kitchen furniture manufacturing sector, 6 companies were selected, with a turnover higher than 2 million euros. Response rate in terms of the universe considered was 40%. Lastly, in the fourth of the sectors selected, stone (granite processing), 5 companies dedicated to extracting and processing granite, were chosen, with a turnover higher than 10 million euros. The response rate was 41.6%.

A summary of the main aspects of supply chain (market, supply chain characterization and supply chain management) in these sectors is presented in table 1.

5. DISCUSSION AND CONCLUSIONS

Although the review of the recent literature is not unanimous regarding the nature of logistics management, it does seem reasonable to equate its meaning with the concept of supply chain management (in activities such as purchasing, supply, production, physical distribution or reverse logistics). In any case, the real problem that companies must face is neither related to the names of functions nor it is a problem of hierarchical dependencies. In fact, it is a problem of coordinated responsibilities oriented to a broad, overall understanding of all the supply chain in order to take efficient and flexible action on the entire system (lean and agile approach).

Indeed, the study undertaken in the four sectors reveals the considerable heterogeneity that exists in relation to the conception and development of the logistics function. In other words, there is no homogeneous response to what firms understand as the meaning of logistics in the development of their activities.

Thus, nowadays, the hard competitive levels that companies must deal with imply the adoption of supply chain models based on agility and efficiency in order to offer to customers a better quality, price and service standards. However, the own configuration of the market can clarify this last statement, as it has been noted in the study developed in this paper.

That means that factors, such as, the short product life cycle (associated to a low predictability of the market), a wide variety of products and a low volume of units per each product, could recommend a more flexible approach (for example fashion sector). Conversely, factors such as the medium or long product life cycle, a reduced variety of products and a low volume of units per product could recommend a more efficient approach (for example in food sector).

Likewise, sectors with a high level of customization (make to order), such as stone and Kitchen furniture ones, must promote a better level of flexibility, specially, in the last steps of the supply chain (production and physical distribution).

Going into further detail, it can be highlighted the different impact of every step in supply chain over lead time and costs reduction. Curiously, all sectors analysed have been promoting flexibility and efficiency in the phases nearer to the market (production and physical distribution), neglecting the supplying phase where the high costs and lead time are produced. Resides, this last statement can be illustrated by the scarce collaboration among companies and suppliers. This collaboration is higher in the case of service suppliers as textile workshops and third party logistics.

Likewise, there are aspects in other steps in supply chain that hinder a wide adoption of flexible and efficient structures. For example, factories in food sector with a production volume under the minimum and efficient size, big batches and long lead times in fabric suppliers or in chipboard suppliers and quality uncertainty due to the internal characteristics of some raw materials as the stone or the wood.

Obviously, if the supply chain integration is higher (for example, in fashion sector with own brand outlets or in food sector with internal supplying of fish), the capacity for controlling it could be higher. However, many companies are not taking advantage of these possibilities due to the scarce existence of a department responsible for coordinating all logistics flows (materials and information) throughout supply chain (except some companies in fashion sector). Likewise, the scarce participation of logistics area in new products design (even in sectors with short product life cycles as fashion sector) makes higher the loss of efficiency and flexibility.

The preliminary results presented in this paper tries to add some new points of discussion to the difficult and complex knowledge of supply chain design from an empirical point of view, although authors nowadays are developing more in detail some issues related to the study. The multi-sectorial approach used in research pretend to be useful both researchers and practitioners.

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	ITEMS	FOOD SECTOR	FASHION SECTOR	KITCHEN FURNITURE MANUFACTURERS	STONE (Granite)
PRODUCT AND MARKETS ISSUES	BASIC VARIETY OF PRODUCTS	MEDIUM	HIGH	MEDIUM	MEDIUM
	PRODUCT LIFE CYCLE	MEDIUM	**SHORT**	MEDIUM	LONG
	NUMBER OF ITEMS PER PRODUCT CATEGORY	**HIGH**	LOW	MEDIUM	LOW
	LEVEL OF CUSTOMIZATION (OVER BASIC VARIETY OF PRODUCTS)	LOW	MEDIUM	**HIGH**	**HIGH**
	PREDICTABILITY OF DEMAND	MEDIUM	LOW	MEDIUM	MEDIUM
SUPPLY CHAIN CHARACTERIZATION	GENERAL CHARACTERIZATION OF PRODUCTION SYSTEM	**MAKE TO STOCK**	**MAKE TO STOCK**	**MAKE TO ORDER**	**MAKE TO ORDER**
	LEAD TIME IN SUPPLIES [1]	**HIGH**	**HIGH**	**MEDIUM**	**HIGH**
	LEAD TIME IN PRODUCTION [1]	MEDIUM	MEDIUM	HIGH	MEDIUM
	LEAD TIME IN PHYSICAL DISTRIBUTION [1]	LOW	LOW	MEDIUM	MEDIUM
	COSTS IN SUPPLIES OVER INTERNAL LOGISTICS COSTS [2]	**75%** [3]	**75%** [4]	**60%**	**40%**
	COSTS IN PRODUCTION OVER INTERNAL LOGISTICS COSTS [2]	20% [3]	15% [4]	30%	40%
	COSTS IN PHYSICAL DISTRIBUTION OVER INTERNAL LOGISTICS COSTS [2]	5% [3]	15% [4]	10%	20%
	LEADERSHIP IN SUPPLY CHAIN MANAGEMENT	LARGE DISTRIBUTION	MANUFACTURERS WITH OWN BRAND OUTLETS	NONE SPECIFICALLY	NONE SPECIFICALLY
	LOGISTICS PROCESSES OUTSOURCED	PHYSICAL DISTRIBUTION (TO 3PLs)	DRESSMAKING (TO TEXTILE WORKSHOPS) AND PHYSICAL DISTRIBUTION (TO 3PLs)	NONE	TRANSPORT (TO 3PLs)
SUPPLY CHAIN MANAGEMENT	KEY FACTORS IN SUPPLIES MANAGEMENT	PARTIAL INTEGRATION OF SUPPLIERS (OWN FISHING FLEET AND FACTORIES IN COUNTRIES WITH FISHERIES AND LOW LABOUR COSTS) FOR ENSURING RAW MATERIALS ACCESS	FLEXIBILITY WITH FABRIC SUPPLIERS IN ORDER TO REDUCE LEAD TIMES AND SIZE BATCHES	FLEXIBILITY WITH WOOD, CHIPBOARD AND ACCESORIES SUPPLIERS IN ORDER TO REDUCE LEAD TIMES AND SIZE BATCHES	PLANNING WITH STONE SUPPLIERS IN ORDER TO REDUCE LEAD TIMES
	KEY FACTORS IN PRODUCTION MANAGEMENT	SCALE ECONOMIES, BASIC PRODUCT FORMAT POSTPONEMENT, FLEXIBLE PACKING PROCESS AND PACKAGING POSTPONEMENT	SCALE ECONOMIES IN FABRIC SPREAD AND CUTTING AND OUTSOURCING OF MAIN DRESSMAKING PROCESS TO INCREASE FLEXIBILITY	SCALE ECONOMIES IN FIRST PRODUCTION PROCESSES (CHIPBOARD CUTTING AND COMPONENT MECHANIZING) AND FLEXIBILITY IN ASSEMBLY PROCESS	FLEXIBILITY FOR CUSTOMER REQUIREMENTS ADAPTATION
	KEY FACTORS IN PHYSICAL DISTRIBUTION MANAGEMENT	FLEXIBILITY IN ORDERS PREPARATION AND EFFICIENCY AND FLEXIBILITY IN TRANSPORT (OUTSOURCING TO 3PLs)	FLEXIBILITY IN ORDERS PREPARATION AND EFFICIENCY AND FLEXIBILITY IN TRANSPORT (OUTSOURCING TO 3PLs); OWN BRAND OTULETS FOR CONTROLLING LOGISTICS FLOWS (MATERIALS AND INFORMATION)	EFFICIENCY AND FLEXIBILITY IN TRANSPORT (WITHOUT OUTSOURCING) AND COORDINATION WITH FURNITURE INSTALLERS	EFFICIENCY AND FLEXIBILITY IN TRANSPORT (OUTSOURCING TO TRANSPORT COMPANIES)
	CURRENT PROBLEMS IN SUPPLIES MANAGEMENT	NOT ALL COMPANIES HAS ENSURED IN A LONG TERM RAW MATERIALS (FISH) ACCESS	SCARCE FLEXIBILITY WITH SUPPLIERS IN ORDER TO REDUCE LEAD TIMES AND SIZE BATCHES	SCARCE FLEXIBILITY WITH WOOD, CHIPBOARD AND ACCESORIES SUPPLIERS IN ORDER TO REDUCE LEAD TIMES AND SIZE BATCHES	SCARCE PLANNING WITH STONE SUPPLIERS IN ORDER TO REDUCE LEAD TIMES
	CURRENT PROBLEMS IN PRODUCTION MANAGEMENT	PROBLEMS OF LOW PRODUCTION VOLUME IN SOME COMPANIES	PEAKS OF WORK IN PRODUCTION ACTIVITIES DUE TO "SEASON" CONCEPT	LOW PRODUCTION VOLUME FOR IMPROVING SOME PROCESSES AUTOMATION	LOW PRODUCTION VOLUME FOR IMPROVING SOME PROCESSES AUTOMATION
	CURRENT PROBLEMS IN PHYSICAL DISTRIBUTION MANAGEMENT	INTERNAL AND INEFFICIENT WAREHOUSES NETWORK	NOT ALL COMPANIES HAVE ADOPTED OWN BRAND OUTLET NETWORK	INEFFICIENT TRANSPORT IN ALL COMPANIES DUE TO NO EXISTANCE OF A SPECIFIC 3PLs FOR TRANSPORTING AND INSTALLING FURNITURE	NONE SPECIFICALLY IDENTIFIED
	CURRENT PROBLEMS IN SUPPLY CHAIN ORGANIZATION	SCARCE COORDINATION IN INTERNAL LOGISTICS ACTIVITIES MANAGEMENT, SCARCE COLLABORATION WITH SUPPLIERS AND DISTRIBUTORS	SCARCE COLLABORATION WITH SUPPLIERS AND MEDIUM COLLABORATION WITH EXTERNAL WORKSHOPS; PROBLEMS OF AGILITY IN SUPPLY CHAIN MANAGEMENT DUE TO "SEASON" CONCEPT IN BUSINESS	SCARCE COORDINATION IN INTERNAL LOGISTICS ACTIVITIES MANAGEMENT, SCARCE COLLABORATION WITH SUPPLIERS AND DISTRIBUTORS	SCARCE COORDINATION IN INTERNAL LOGISTICS ACTIVITIES MANAGEMENT, SCARCE COLLABORATION WITH SUPPLIERS AND DISTRIBUTORS
	CURRENT PROBLEMS IN NEW PRODUCT DESIGN	SCARCE PARTICIPATION OF LOGISTICS AREA IN NEW PRODUCT DESIGN	"SEASON" CONCEPT WIDELY IMPLEMENTED IN ALL COMPANIES; SCARCE PARTICIPATION OF LOGISTICS AREA IN NEW PRODUCT DESIGN	SCARCE PARTICIPATION OF LOGISTICS AREA IN NEW PRODUCT DESIGN	SCARCE NEW PRODUCT DEVELOPMENT
	THREATS FROM A SCM POINT OF VIEW	ENVIRONMENT PRESERVATION, BASIC PRODUCT FROM ASIA AND UNLABELLED PRODUCTS	PRODUCT OBSOLESCENCE, LOW PRICED PRODUCT FROM ASIA AND IMITATIONS	ENVIRONMENT PRESERVATION AND FURNITURE IN "KIT" FORMAT (FROM WORLDWIDE)	ENVIRONMENT PRESERVATION

1. Lead time scale: Low (hours/days); Medium (days/weeks); High (more than a month)
2. Example of a typical company for illustration
3. Company of canned products without integrated supplies
4. Company with only 20% of internal production

Table 1. Main results of supply chain analysis in four sectors selected