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LOGISTICS AND ITS INDISPUTABLY GROWING IMPORTANCE IN CURRENT GLOBAL WORLD'S ECONOMY

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Abstract: *The paper deals with very up-to-date topic, current global world has got very dynamic character and it's typical by frequent changes in the business markets. Gross domestic product of single countries and as well world gross domestic product are driven more or less through economies of particular countries. Each economy of any advanced country is pushed forward by particular industries which have got their own supply chains. Inside those supply chains are originating huge material, financial and information flows which must be planned and managed to reach required competitiveness and to minimize negative impacts on living environment. Logistics, as a science is having developed methods and approaches to plan and manage those huge flows and it also develops new methodologies within the scope of supply chain management thereby it considerably contributes to enhance world gross domestic product.*

Key words: *Logistics, Supply Chain, Global Supply Chain Trends, Gross Domestic Product*

1 INTRODUCTION

In the current global world's economy, each industrial branch, whether e.g. air, automotive, pharmaceutical, food, or metallurgical industry, has got its own supply chain formed by huge material, financial and information flows. All three kinds of flows must be

planned and manage to reach required level of competitiveness and simultaneously to minimize negative impacts on living environment. Logistics is a science playing significant role in today's global world, it has got developed methods, approaches to effectively plan and manage all three mentioned flows and also it develops new methodologies to manage more and more complex supply chains. Through developed and new developing logistics methods, approaches and methodologies to plan and manage, it's possible considerably contribute to enhance gross domestic product (GDP) of single countries thereby also to enhance world gross domestic product.

The evolution of world gross domestic product along first decade of the 21st Century had positive growing trend, see figure 1. In the figure 1 it's evident the global economic crisis of 2008 and 2009 which caused the total merchandise trade decline thereby also the world's GDP decline.

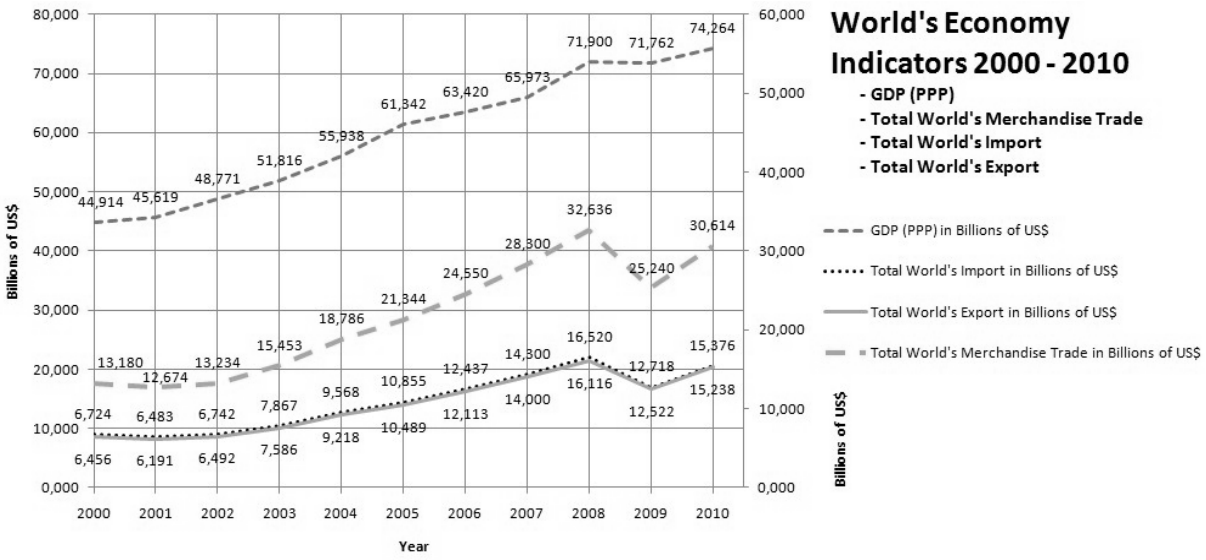

Fig. 1 *World's Economy Indicators 2000 – 2010 [1, 2]*

For better notion, in 2011, the largest economies in the world, which considerably affect the world's GPD pattern, are the United States, China, Japan, Germany, France and the United Kingdom, see figure 2.

The reality is that international trade is the indisputable foundation for economic growth and prosperity.

Rank	Flag	Region	GDP (PPP) in Billions of US$ / year 2010
-	-	World	**74,264**
-		European Union	15,170
1.		United States	14,658
2.		People's Republic of China	10,086
3.		Japan	4,310
4.		India	4,060
5.		Germany	2,940
6.		Russia	2,223
7.		United Kingdom	2,173
8.		Brazil	2,172
9.		France	2,145
10.		Italy	1,774
			Source: International Monetary Fund (2010)

Fig. 2 *Leading Economies in the World in 2010 [3]*

2 MODERN EVOLUTION OF LOGISTICS

The evolution of logistics has been characterized by an increasing degree of integration (see figure 3), a trend that was underlined in the 1960s as a key area for future productivity improvements since the system was highly fragmented. This led to consolidation into two distinct functions related to materials management and physical distribution. This process moved further in the 1990s with a functional integration and the emergence of logistics in a true sense; all the elements of the supply chain became part of a single management perspective. However, only with the implementation of modern information and communication technologies did a more complete integration became possible with the emergence of supply chain management. It allows for the integrated management and control of information, finance and goods flows and made possible a new range of production and distribution systems. Supply management has become a complex sequence of activities aiming at value capture. [4]

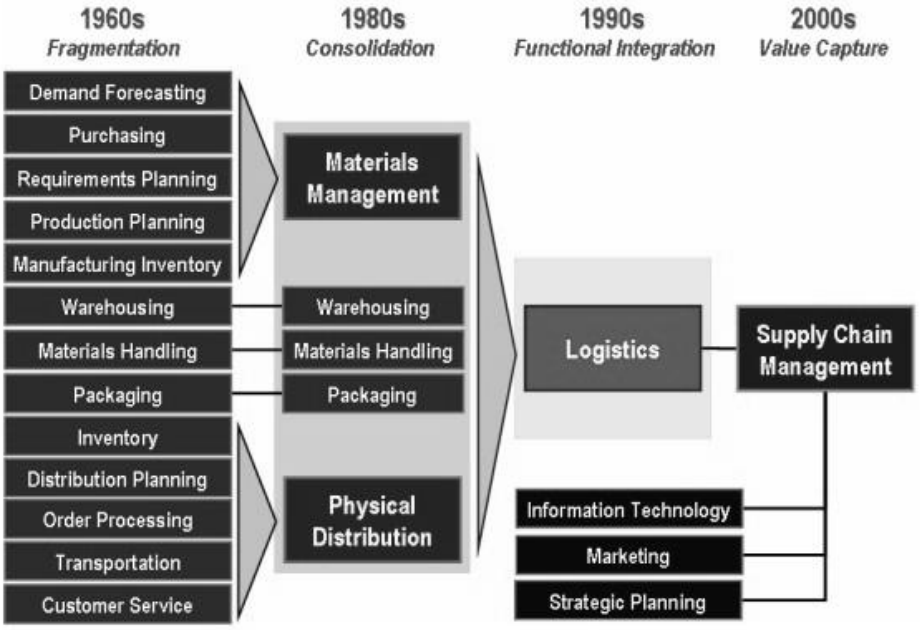

Fig. 3 *Modern Evolution of Logistics [4]*

Nowadays it can be spoken on purchasing logistics, production logistics, logistics to inventory management, packaging logistics, distribution logistics, reverse logistics and green logistics within the frame of any industrial company. In relation to a tertiary sphere can be spoken on city logistics and logistics of crisis situations. As a result of today's strong globalization trend, in both two main areas to apply logistics approaches and methods – industrial field and tertiary field can be applied techniques and approaches of eurologistics and global logistics too.

3 LOGISTICS MANAGEMENT

Logistics management is the governance of supply chain functions. Logistics management activities typically include inbound and outbound transportation management, fleet management, warehousing, materials handling, order fulfillment, logistics network

design, inventory management, supply/demand planning, and management of third party logistics services providers. To varying degrees, the logistics function also includes customer service, sourcing and procurement, production planning and scheduling, packaging and assembly. Logistics management is part of all levels of planning and execution – strategic, operational and tactical. It is an integrating function, which coordinates all logistics activities, as well as integrates logistics activities with other functions including marketing, sales, manufacturing, finance, and information technology. [5]

4 SUPPLY CHAIN

A supply chain consists of all stages involved, directly or indirectly, in fulfilling a customer request. The supply chain not only includes the manufacturers and suppliers, but also transporters, warehouses, retailers and customers themselves.

A supply chain is dynamic and involves the huge flows of information, product and funds between different stages. Each stage of the supply chain performs different processes and interacts with other stages of the supply chain.

A typical supply chain may involve a variety of stages. These supply chain stages can be (see figure 4):

- Customers,
- Retailers,
- Wholesalers / distributors,
- Manufactures,
- Component / raw material suppliers. [6]

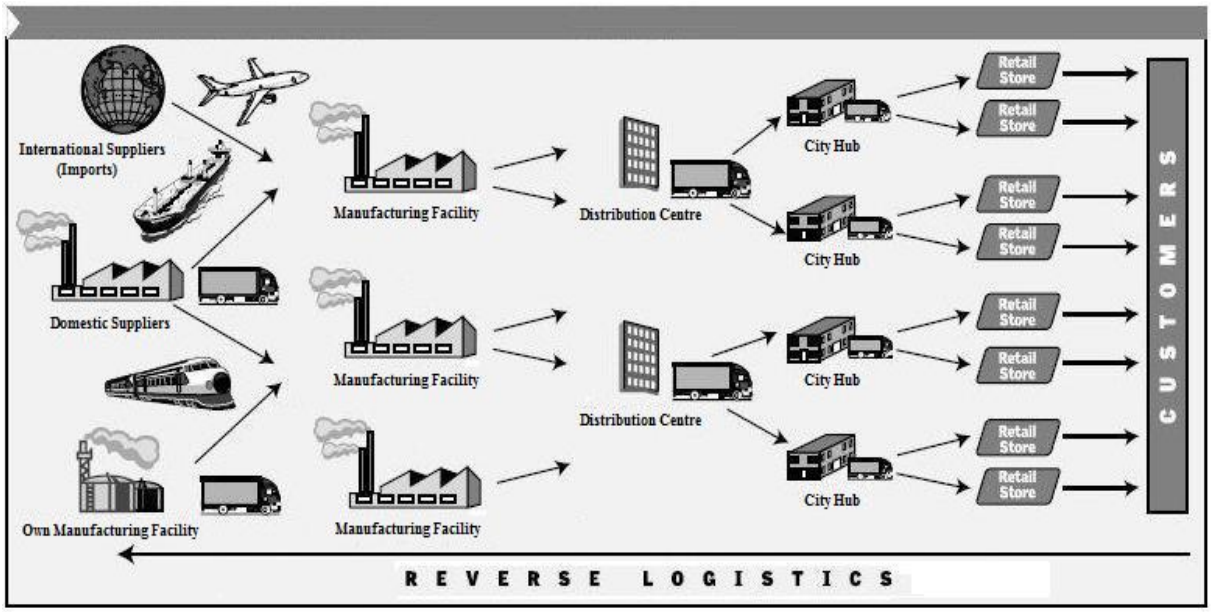

Fig. 4 *General Illustration of Supply Chain [7]*

5 SUPPLY CHAIN MANAGEMENT

Supply chain management (SCM) involves the management of huge flows between and among stages in a supply chain to maximize total profitability. [6]

SCM is the integration of key business processes from end user through original suppliers that provides products, services, and information that add value for customers and other stakeholders, see figure 5.

Thousands of activities are performed and coordinated within a company, and every company is by nature in some way involved in supply chain relationships with other companies. Successful supply chain management requires integrating business processes with key members of the supply chain. Valuable resources are wasted when supply chains are not integrated, appropriately streamlined, and managed. The value of having standard business processes in place is that managers from different organizations in the supply chain can use a common language and can link-up their firms' processes with other members of the supply chain, as appropriate. [8]

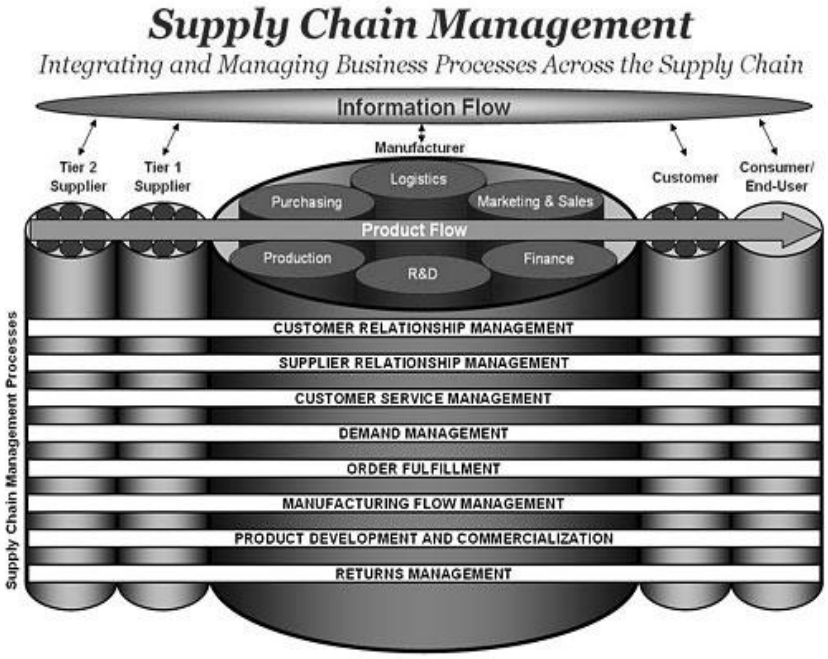

Fig. 5 *General Illustration of SCM [8]*

Supply chain management co-ordinates flows of information and product through integrated logistical networks. In today's marketplace efficiency, cost-effectiveness, appropriate customer service, and sustainability unlock profitability and competitive advantage.

Every enterprise has its unique characteristics and dynamics. In a rapidly shrinking world, many logistical issues now have an international dimension. Selecting the right supply chain options is an increasingly complex task. [9]

With increased globalization and offshore sourcing, global supply chain management is becoming an important issue for many businesses. Like traditional, supply chain management,

the underlying factors behind the trend are reducing the costs of procurement and decreasing the risks related to purchasing activities. The big difference is that global supply chain management involves a company's worldwide interests and suppliers rather than simply a local or national orientation.

Because global supply chain management usually involves a plethora of countries, it also usually comes with a plethora of new difficulties that need to be dealt with appropriately. One that companies need to consider is the overall costs. While local labor costs may be significantly lower, companies must also focus on the costs of space, tariffs, and other expenses related to doing business overseas. Additionally, companies need to factor in the exchange rate. Obviously, companies must do their research and give serious consideration to all of these different elements as part of their global supply management approach.

Another big issue that should be addressed when dealing with global supply chain management is time. The productivity of the overseas employees and the extended shipping times can either positively or negatively affect the company's lead time, but either way these times need to be figured into the overall procurement plan. Other factors can also come into play here as well. For example, the weather conditions on one side of the world often vary greatly from those on the other and can impact production and shipping dramatically. Also, customs clearance time and other governmental red tape can add further delays that need to be planned for and figured into the big picture. [23]

6 GLOBAL SUPPLY CHAIN TRENDS 2010-2012

The global economic crisis of 2008 and 2009 provided significant disruptions and high demand volatility in supply chains for companies across many industries. In a number of sectors, demand and supply almost came to a halt, forcing companies to enact short-term measures to tightly manage inventories, costs, and cash flow.

Compare this with early 2010. As the global economy continues to recover, most of the companies surveyed now believe there will be a significant upturn in demand from their customer base as well as a significant increase in company profitability over the next few years.

However, this widespread optimism may be premature. Our findings indicate that many companies lack the capabilities critical for meeting growing demand or for managing an increasingly complex and global supply chain. Driven by short-term exigencies, many companies did not strengthen critical capabilities during the recession. Only a small percentage truly improved supply chain flexibility and processes needed both to capture an increase in demand and to better manage high volatility. The degree to which companies can capture benefit from an eventual upturn will depend largely on how they deal with five key supply chain challenges or trends, see table 1.

***Tab. 1** Current Main Trends of the Global Supply Chains [10]*

Global Supply Chain Trends				
Trend 1	Trend 2	Trend 3	Trend 4	Trend 5
Supply chain volatility and uncertainty have permanently increased	Security growth requires truly global customer and supplier network	Market dynamics demand regional, cost-optimized supply chain configurations	Risk management involves the end-to-end supply chain	Existing supply chain organizations are not truly integrated and empowered

6.1 Constantly Increasing Supply Chain Volatility and Uncertainty

Market transparency and greater price sensitivity have led to lower customer loyalty. Product commoditization reduces true differentiation in the consumer and business-to-business (B2B) environments.

6.2 Global Customer and Supplier Networks

Future market growth depends on international customers and customized products. **Increased supply chain globalization and complexity need to be managed effectively.** For that purpose is crucial to use sophisticated management tools, techniques and simultaneously to do research in the way of effective supply chain flow management.

6.3 Cost – Optimized Supply Chain Configurations

Customer requirements and competitors necessitate regionally tailored supply chains and product offerings. End-to-end supply chain cost optimization will be critical.

6.4 Risk Management

Risk and opportunity management should span the entire supply chain—from demand planning to expansion of manufacturing capacity—and should include the supply chains of key partners.

6.5 Integration and Empowering

The supply chain organization needs to be treated as a single integrated organization. In order to be effective, significant improvements require support across all supply chain functions. [10]

7 CASE STUDY

A global international company has got 7 production plants whose final product assortment is distributed all over the World. In those production plants is applied logistics management based on logistics postponement strategy to plan and manage all material flows concerning production and distribution of final product assortment, see figure 6.

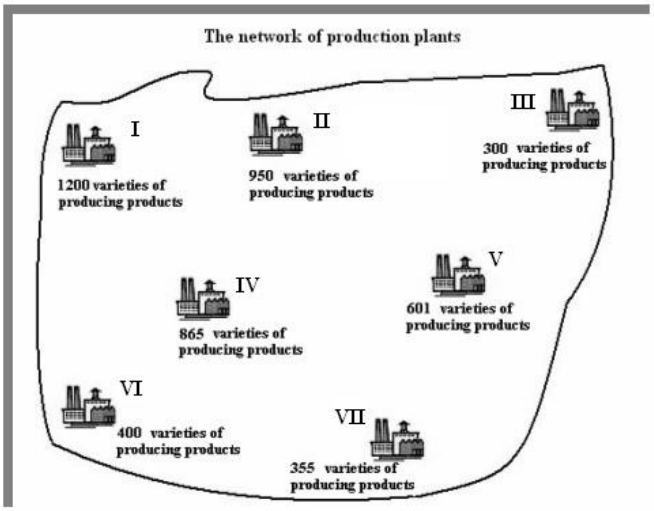

Fig. 6 *General Illustration of Production Plant Locations [11]*

The logistics postponement strategy is based on a centralized warehouse system of final product assortment of all 7 production plants. A central distribution warehouse is used to sort, pack, label, store and distribute to final destinations. Further the strategy uses well-developed system to forecast a demand level of final product assortment in particular business sectors.

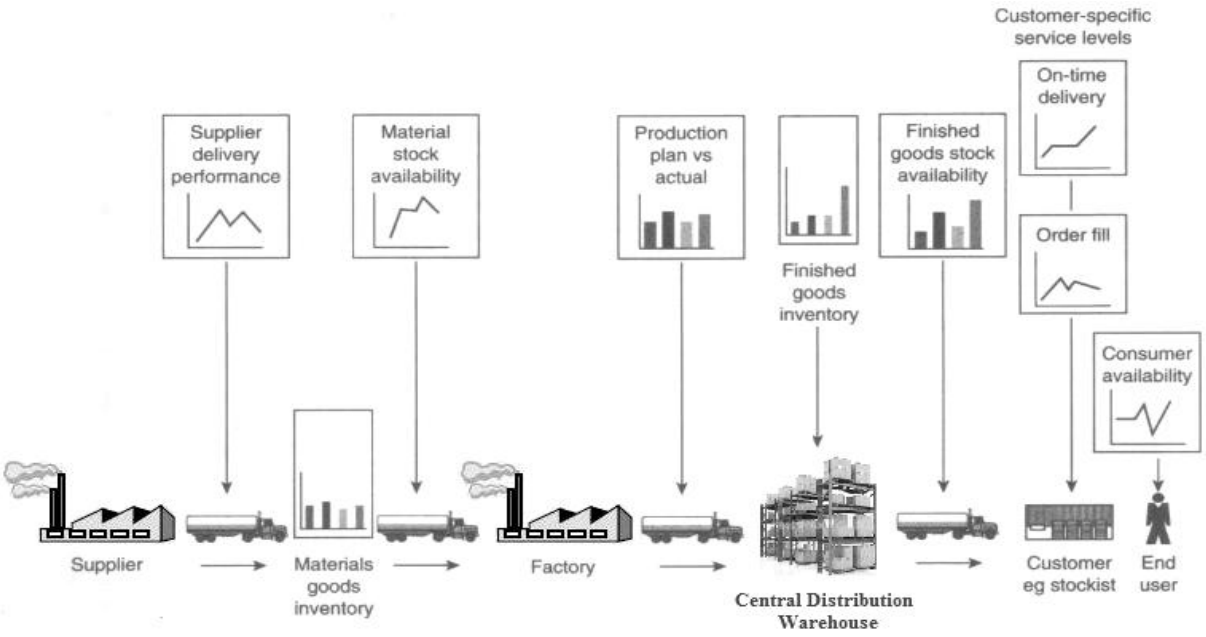

Fig. 7 *General Illustration of Supply Chain Metric System [12]*

The management of huge materials flows of those 7 production plants is further based on well-developed supply chain metric systems of single production plants across all their supply chains, see figure 7. To model, simulate, optimize and also to manage and control entire supply chains of particular 7 production plants is developed sophisticated system which permanently monitors several fundamental logistics parameters of material flow efficiency: supplier delivery performance, raw-material inventory level, raw-material availability, production plan vs. actual plan, finished goods inventory level, finished goods stock

availability, on-time delivery to customer, customer order fill and consumer availability. [12, 13]

The above mentioned logistics concept to plan and manage huge material flows of those 7 production plants thereby also to manage associated information and financial flows leads to effective management in relation to a competitive advantage gaining and a living environment protection. For better illustration how the postponement logistics strategy works, please see figure 8.

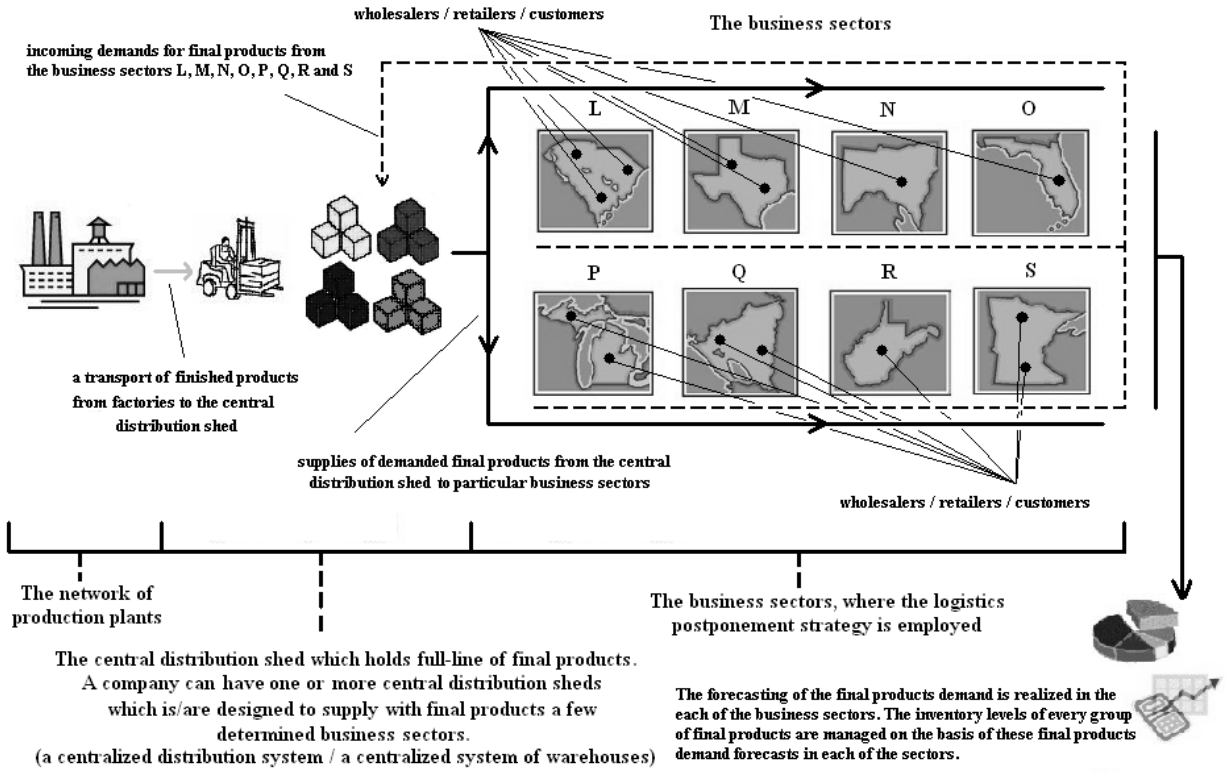

Fig. 8 *General Illustration of Logistics Postponement Strategy [11]*

All 7 production plants produce final product assortment according to their production plans which are based on demand level forecasts. Each business sector is analysed concerning demand level pattern and on done analysis the system to forecast generates final forecasts of final product future demand for each business sector. Produced items of final products produced in any of the 7 production plants are carried into the central warehouse where there are packaging, labelling, storage and dispatch area. As soon as an order from a customer is received warehouse staff checks inventory level of demanded items on the stock and prepare consignment to dispatch.

The main logistics indicators (supply chain metrics) by using logistics postponement strategy to manage material flows across entire supply chain are:

- low production cost,
- low / middle inventory cost, compared to decentralized warehouse system,
- middle customer service,
- lower safety stock level compared to decentralized warehouse system,
- higher customer lead-time compared to decentralized warehouse system,

- higher outbound transportation cost compared to decentralized warehouse system,
- lower inbound transportation cost compared to decentralized warehouse system. [15]

8 CONCLUSIONS

Current world is characterized by total globalization trend which is the most typical for international trade and particular industries. There are plenty of different supply chains containing huge flows necessary to plan and manage. Almost each industry has got its own supply chain whose flows must be managed to be cost-effective and eco-friendly. As a result of the globalization trend is that the all supply chains are getting more and more complex and require more sophisticated methods and approaches to plan and manage their huge flows. For better illustration, please see figure 9, to see increasing trend of World's Freight Traffic 2000 – 2010. [16, 17, 18]

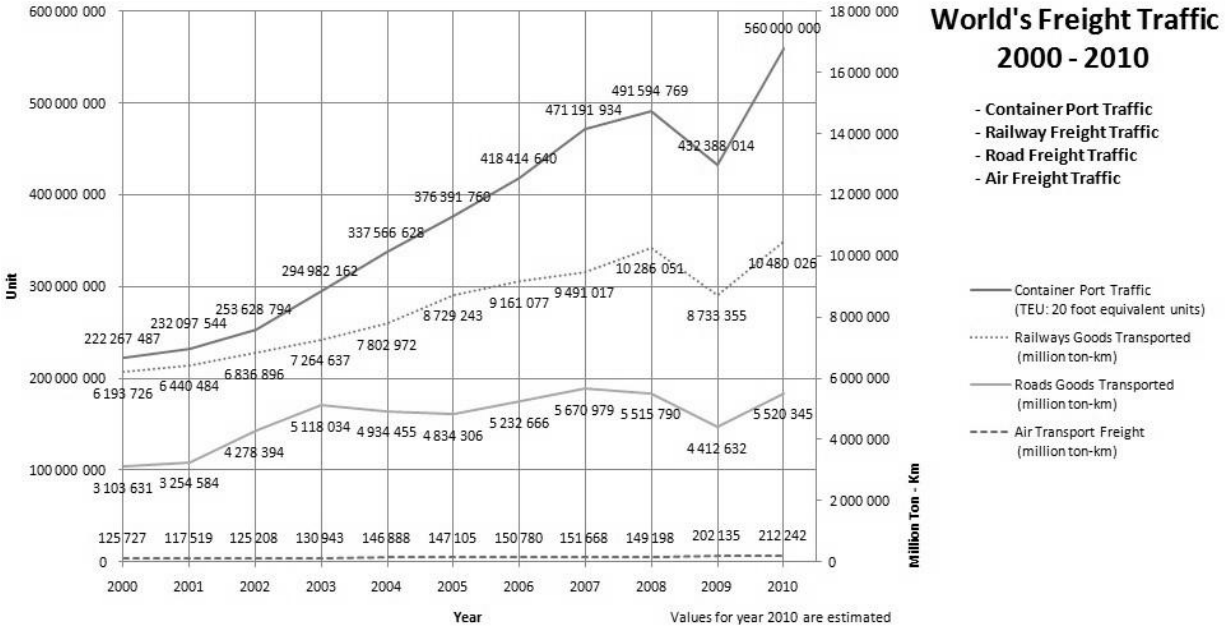

Fig. 9 *World's Freight Traffic 2000 – 2010 [14]*

It's evident positive trend of huge goods and material flow volume in the world during past 10 years. All huge flows within the scope of particular supply chains carried whether by ship, railway, road or air should be managed more precisely as a consequence of more complex global supply chains in current world's economy. Logistics is a science having well-developed methods and approaches to plan, manage and control those flows and it's still developing new methodologies as a result of more complex and huge flows inside global supply chains. [19, 20, 21, 22]

That all should lead to enhance a level of interested industrial branches concerning flow management and as a result of the logistics management concept should be long – term enhancement of GDP whether single country GDP or total world's GDP. Well, it's evident that the analytical and systematic approach using logistics science methods and methodologies to manage all huge flows inside the great numbers of supply chains is crucial to be cost – effective and living environment – friendly in today's global economy. As a main

result of systematic global logistics management should be a long – term increasing of single country GDP thereby also a long – term increasing of world's GDP.

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