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GLOBALIZATION - THE KEY CHALLENGE OF MODERN SUPPLY CHAINS

Abstract

The aim of the paper is to present challenges generated by globalization in modern supply chains. First, authors point to the fact that, today, companies cannot successfully fulfill the requirements of customers and increase global competitiveness without establishing close relationships with key suppliers and without better coordination of internal and external flows of materials. Then, the focus shifts to the importance of harmonizing relations with suppliers and distributors to increase the company's supply chain resilience to global environmental impacts. The final part presents responsibility of production managers, procurement managers, and other professionals to implement strategies that would enable the development of flexible and cost-efficient supply chains, more resistant to environmental changes.

Key words: *Supply chain, globalization, Strategy to increase the number of suppliers, strategy to increase inventory levels, operational hedging, financial hedging.*

JEL Classification: F69, M160.

ГЛОБАЛИЗАЦИЈА - КЉУЧНИ ИЗАЗОВ САВРЕМЕНИХ ЛАНЦА СНАБДЕВАЊА

Апстракт

Циљ рада је да се презентују изазови које генерише глобализација за савремене ланце снабдевања. Најпре се указује на чињеницу да данас компаније не могу успешно испунити захтеве купаца и повећати глобалну конкурентност без успостављања блиских односа са својим кључним добављачима као и без унапређења координације интерних и екстерних токова материјала. Затим се образлаже значај усклађивања односа са добављачима и дистрибутерима компаније ради повећања отпорност ланца снабдевања на утицаје глобалног окружења. На крају се презентује одговорност менаџера производње,

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набавке и других професионалца за имплементирање стратегија које би омогућиле развијање флексибилнијих, трошковно ефикаснијих и отпорнијих на промене окружења ланаца снабдевања.

Кључне речи: ланац снабдевања, глобализација, стратегија повећања броја добављача, стратегија повећања нивоа залиха, оперативни *hedging*, финансијски *hedging*.

Introduction

The term *globalization* has been used in reference works and business practice for three decades now, and generally involves a series of complex economic, social, technological, cultural, and political changes taking place around the world. Globalization of business is not a straightforward process. It is often seen as a process with positive effects, because it allows people and companies around the world to connect to each other. According to the opposite view, globalization of business is a process under the control of multinational companies, which allows them to significantly control global flows of capital and increase exploitation of primarily poor countries. Therefore, one could say that globalization is new and the highest stage in the development of multinational companies. Modern stage of the process of globalization stands for the project and idea of an integrated international market, and, therefore, its emphasis is on the economic aspect of globalization (Veselinović, 2013, p. 371).

Two key categories in the process of globalization are global market and global product. Economies of scale require the existence of the largest possible market that will not restrict the use of production capacities. The emergence of a global product that is used all over the world shows that the market is near its maximum limits (Todorović, and Marković, 2013, p. 13).

Due to globalization of business, supply chains are becoming more complex. Consumers demand innovative products at the right time and at a reasonable price. In such circumstances, managers find it increasingly difficult to create responsive and cost-effective supply chains.

One of the biggest challenges facing companies is finding ways to reduce the costs of their supply chain. In order to meet expectations of consumers regarding price, companies are moving production to countries with low costs and try to directly or indirectly minimize allocation for taxes. However, doing business with global suppliers can lead to increased complexity of supply chains and extension of the product delivery period. In such conditions, responsibility of managers to implement adequate strategies to reduce the risk of supply chains increases.

1. Critical challenges of global supply chains

Globalization is one of the greatest paradoxes of the past three decades. On the one hand, globalization should provide a nearly endless choice to individuals, which would lead to homogenization of the whole of humanity. On the other hand, it should provide globally-oriented companies with a chance to *increase economies of scale*. China today is a country of choice of major manufacturers, while service sector is mainly located in India.

Globalization allows multinational companies to shift from the logic of independent investors in foreign projects to the logic of leaders of global networks that integrate sources of supply, production capacities, knowledge, and consumers from around the world. Thus, in conditions of globalization, multinational companies focus on the integration of their activities at a global level, to coordinate and take advantage of the connections between different locations (<https://www.ukessays.com/essays/business/globalization-of-markets.php>). In such conditions, these corporations seek to expand their operations to “the same level” in different supply chains in which they are included. At this level, efforts of multinational companies in relation to coordination are focused on increasing “*parallel*” (“*horizontal*”) interdependence. This is a static view of globalization. It is based on the assumption that globalization is mainly related to coordination of ongoing activities within one and the same company, and that it happens in a static environment.

The static view of globalization is not complete. Empirical studies have shown that companies globalize largely through mergers, acquisitions, and strategic alliances. In these cases, globalization is mostly related to the coordination of a large number of activities of different companies. Everything happens in a “globalized environment”. This is more realistic (*dynamic*) view of globalization. By entering into mergers, acquisitions, and strategic alliances, companies increase the chances for the establishment of complex interconnections. In addition, chances of globalization of companies at any level in the supply chain depend on the degree of globalization of companies at other levels.

In order for companies to be competitive, their supply chain needs to be cost-efficient, responsive, flexible, and agile, and must enable customers to get the right products in the right quantity, at the right time and the right place. It is difficult to develop a supply chain that has all of these characteristics. Global market is a huge area, with different languages, culture, currency, regulations, taxes, infrastructure, business practices, and organizational forms. Countries’ levels of economic development differ as well. Therefore, managers’ attempts to optimize the supply chain can sometimes seem almost futile.

In a large number of developing countries, such as, for example, Western Balkan countries, practical application of the concept of supply chain management is in its infancy. Increasingly intense globalization of business, precarious supply networks, and varying and shortening product life cycle have forced some companies in these countries to intensify cooperation with partners in their supply chain.

Companies in the Republic of Serbia face numerous challenges in relation to the supply chain. The most important are: underdeveloped logistics infrastructure, lack of information and experts in the field of logistics, lack of modern transport and storage technology, use of outdated organizational models, complicated supply chain network, specific culture, unfamiliarity with the structure of logistics costs in companies, as well as their relatively high share in GDP (between 15 and 18 percent). Nevertheless, the concept of supply chain management is widely and successfully implemented by companies from different sectors. Among these challenges, trust, as part of the culture, plays a significant role in implementation of the concept of supply chain management. Trust is the basis for the exchange of information and development of cooperation between members of the supply chain in the Republic of Serbia. However, underdeveloped logistics infrastructure and lack of professionals in the field of logistics are major challenges for the development

of supply chains in the Republic of Serbia, as well as in most of the countries of the Western Balkans.

In order to successfully operate in the modern environment, companies need to become part of global supply chains. Control of global supply chains rests on constant commitment of managers to optimize their activities and processes. In order to achieve success, all companies within the global supply chain must continually improve: flow of raw materials, finished products, money, and information; control of logistics costs; and the level of satisfaction of shareholders and consumers. To achieve this goal, it is important to effectively manage the relationship between providers and users of logistics services. Generally, efficient logistics is a key factor in competitiveness of global supply chains. In the US, about 86 percentage of companies in the Domestic Fortune 500 list do business with providers of logistics services (<http://www.3plogistics.com/3pl-customers-report-identifies-service-trends-3pl-market-segment-sizes-and-growth-rates-2/>).

In today's business environment, there are more and more products with a short life cycle (Määttä, 2013, p. 3). Volume of international transport of goods, rate of product innovation, and instability of demand constantly grow. In such an environment, it is not enough to apply lean concepts, i.e. efficiency concepts (such as just-in-time and quick response concept) in logistics processes, but also agility concepts (quick response to the changing needs in both volume and variety terms) (Jain, et al., 2008, pp. 367-385). While lean supply chain management focuses on minimizing costs and losses of the company, agile supply chain management is focused on creating highly flexible supply chain, in which the flows of materials, products, money, and information can take place quickly and easily. Lean supply chain involves low waste, while agile supply chain is “sleek and agile as a gymnast” (Cornillie, and Macharis, 2006, pp. 15-26). Supply chain managers are now expected to skillfully combine lean and agile concepts of supply chain management. Unfortunately, relevant scientific works still do not provide a method for determining the optimal mix of these concepts in practice.

Each segment of the supply chain must be flexible enough to be able to quickly identify and exploit new environmental opportunities. Any potential opportunity must be measured on the basis of the matrix of *quantitative* and *qualitative* factors – from local taxes and regulatory costs, through labor availability and transport costs, to economic and political risks in the context of a particular national market. Principles of supply chain can be quite simple, but the execution of the supply chain strategy is, as a rule, complex. Strategy is often related to very complex supply chain processes, such as procurement of raw materials, production, and delivery of products in different geographic areas. Companies in developing countries focus on the creation and fast operation of the logistics network, while companies on developed markets are more focused on optimizing the existing logistics network.

Gaining insight into costs is imperative for companies operating on the international market. They have to know cost generators of the global supply chain within each function, and then adjust the overall supply chain strategy to achieve success on every market. Upon gaining access to all the costs of the global supply chain, companies can accurately assess and evaluate impacts of possible compensation (*trade-offs*).

2. Globalization as an opportunity to reduce costs in the supply chain

Globalization provides an opportunity for consumer electronics manufacturers to focus on the production of standardized, small, and expensive electronic components at a small number of locations, so that they can be transported relatively easily and at low cost. Such producers achieve economies of scale by manufacturing products that can be installed in a variety of products throughout the world and by consolidated shipment. For example, Foxconn Technology Group, the world's largest electronics manufacturer and the largest employer in China (<http://www.reuters.com/article/2010/07/22/us-china-labour-idUSTRE66L0A220100722>), gathers under its roof companies such as Apple, Cisco, Dell, Microsoft, Google, Nokia, and Toshiba, and is an excellent example of the use of economies of scale. Moreover, globalization affects the behavior of clothing manufacturers.

Commercial effects of global supply chains significantly depend on a reduced share of transportation costs in total costs. Transport costs, for example, can be reduced by the formation of supply hubs, especially when several components are procured from multiple locations on the global market. For example, many manufacturers in Asia have created hubs, to which consolidated shipments, rather than small consignments are transported.

A significant reduction in transport costs can be achieved by designing products that would allow fuller capacity utilization of transport equipment. Swedish company IKEA has significant experience in this regard. The world's largest seller of furniture (in 2013 it had 1,800 suppliers from 50 countries, 9,500 different products, 345 stores in 42 countries, 32 distribution centers in 16 countries, 1.5 million deliveries a year, and achieved sales of 35.5 \$ billion) has been known for more than 60 years (http://www.supplychain247.com/article/how_does_ikeas_inventory_management_supply_chain_strategy_work), among other things, for its production of flat-packed products of modular design, which can be quickly packed and loaded into transport vehicles, with increased level of use and reduced shipping costs (*Figure 1*). IKEA efficiently manages relationships with suppliers and manufacturers of materials. As a result, materials are procured at reasonable prices.



Figure 1 IKEA warehouse

In addition to encouraging competition between suppliers, so that they could offer the best materials at advantageous prices, IKEA builds long-term business relationships with them, and, thus, further reduces product prices.

In 2000, IKEA introduced a code of conduct, called *IKEA Way on Purchasing Home Furnishing Products (IWAY)*, which defines what suppliers can expect from it and what it requires of them. Today, IKEA applies several codes of conduct (*IWAYs*) relating to various aspects of its operations (http://www.ikea.com/ms/en_AU/about_ikea/our_responsibility/iway/).

IKEA is characterized by catalog sale of products (Harapiak, 2013, pp. 25-51) that are available to customers for a year at guaranteed product prices. IKEA designs unique products that generate low production costs and also meet stringent requirements in terms of function, distribution, quality, and environmental impact.

According to a study realized by journalists of London daily *The Times*, more than 50 percentage of IKEA products are made of ecological or recycled components. Also, IKEA strives to use a small amount of material in the production of final products, without lessening their quality and durability. Such a strategy allows IKEA to reduce labor costs relating to the acquisition of materials and final product transportation costs.

In the case of procurement of several components from different markets, companies can use hubs and thus significantly reduce transportation costs. It is known that some manufacturers in Asia have created hubs to replace expensive transportation of small individual shipments from each supplier by cheaper transport of consolidated shipments.

3. Strategies to reduce risk in global supply chains

If managers do not implement appropriate strategies for risk reduction, they can significantly reduce the possibility of creating an efficient supply chain. For example, the strategy of *increasing the number of suppliers* can influence the risk of interruptions in supply from any source. An excellent example is the interruption in the supply of *Nokia* and *Telefon AB LM Ericsson* by *Philips* factory in Albuquerque, New Mexico, USA, which occurred on 17 March 2000 due to the outbreak of fire (Sheffi, and Rice, 2005, pp. 41-48). *Nokia* and *Telefon AB LM Ericsson* reacted differently to this incident in the supply chain. *Nokia* found a solution quickly, and took advantage of several other factories in its supply chain. In contrast, *Telefon AB LM Ericsson*, another buyer of chips produced by New Mexico factory, pursued a policy of supply from one source. When a New Mexico factory stopped working because of the fire, *Ericsson* did not have a spare supplier of microchips, which is why it had problems in the production of mobile phones for a few months and reduced revenues by approximately 400 million dollars (Chopra, and Sodhi, 2004, pp. 53-62). Apart from *Ericsson*, many other companies learned a lot from this incident.

Strategy to reduce one risk can increase other risks. For example, *strategy of increasing inventory levels* reduces the risk of delay in supply, but increases the risk of obsolescence of goods. By implementation of strategies to increase the number of suppliers, the company reduces the risk of interruption of supply, but increases the total cost, because, in this case, each supplier finds it more difficult to count on the effects of economies of scale. Therefore, managers should develop *specific strategies for reducing costs while creating supply networks*. Such strategies allow *trade-off* between risk reduction and cost increase (*Table 1*).

Managers of global supply chains should combine strategies for reducing risks with financial strategies. For example, global supply chain strategy, focused on reducing costs, can direct production to only a few countries with lower costs. This creates a supply chain with inflexible capacities, which is vulnerable to the risk of supply interruption and the risk of fluctuations in the price of transport and exchange rates. The company that is a member of such a supply chain must reduce transport costs and costs of exchange rate differences, because it cannot cope with fluctuations in the price of transport and exchange rates. In contrast, the global supply chain with flexible capacities offers the possibility of moving production to locations that are most effective in certain macroeconomic conditions. This concept of supply chain reduces the need for *financial hedging*, i.e. financial transactions which one enters with the aim of limiting or reducing the risk of existing investment positions. Unlike previous ones, operational transactions for risk insurance (*operational hedging*) (http://ink.library.smu.edu.sg/lkcsb_research/3758), such as increase in flexibility, are much harder to implement. However, they have the advantage of being more reactive, i.e. include reconfiguring the supply chain in order to best accommodate it to a given environment.

Operational hedging is a holistic approach to risk management (<http://business.financialpost.com/executive/operational-hedging-curbs-exchange-rate-uncertainty>) that allows more flexibility when designing and changing supply chain. Managers should use operational hedging strategies together with financial hedging to prevent or mitigate major changes in the structure of costs caused by exchange rate changes, customer demand, and competition. Typical operational hedging strategies are: strategy to improve company's supply chain, strategy to win customers and achieve competitive advantage, and procurement strategy based on a unique business model and market environment of the company.

Table 1. Approaches to reducing risk and specific strategies to reduce costs while creating a network

<i>Approach to reducing risks</i>	<i>Specific strategies to reduce costs</i>
Increasing capacity	Focus on cheap, decentralized capacities for foreseeable demand. Build centralized capacities for unpredictable demand. Increase decentralization as costs of capacity fall.
Providing new suppliers	Favor larger number of suppliers in case of procurement of products in large quantities. Focus on a smaller number of suppliers in case of procurement of products in small quantities. Centralize procurement of products in small quantities from several flexible suppliers.
Increasing responsiveness	In the case raw materials, favor costs relative to responsiveness. In the case of short product life cycle, favor responsiveness in relation to costs.
Increasing inventories	Decentralize inventories of lower value whose demand is predictable. Centralize inventories of greater value, whose demand is less predictable.
Increasing flexibility	Favor costs compared to flexibility of products with high and predictable demand. Favor flexibility of products with low and unpredictable demand. Centralize flexibility to a small number of locations if it is expensive.
Aggregation of demand	Increase aggregation as unpredictability grows.
Increasing supply opportunities	Favor supply opportunity in relation to cost of products of high value and high risk. Favor costs in relation to supply opportunity of products of lower value.

Source: Chopra, and Sodhi, 2004, pp. 53-62.

Not all strategies to reduce risk are successful. For example, Honda relied on flexibility of its plants when demand for vehicles in 2008 started going in an undesirable direction. If it had not been for fluctuation in demand, Honda could not have relied on flexibility. Increased flexibility of its production owes a lot to *IBAS (Intelligent Body Assembly System)* (CIO, 1991, p. 15), developed by experts from Nissan in early 1990s. IBAS is based on the concepts of flexible production as well as software that allows one to specify distance between individual parts of the car body and the selection of tools for assembling 30 different types of cars (<http://www.allbusiness.com/professional-scientific/scientific-research-development/248282-1.html>). Owing to the implementation of *IBAS*, Nissan shortened body development and manufacturing time, while satisfying growing needs of customers. Despite numerous advantages, in early 1990s, IBAS brought Nissan almost to bankruptcy, because, during its introduction, the situation on the car market was relatively stable. Similarly, by using hedging strategy, the company Southwest Airlines managed to, from 1999 to 2008, save about 3.5 billion dollars on fuel (<http://www.msnbc.msn.com/id/26761843>). However, hedging strategy cost this company a lot at the end of 2008, due to a significant drop in the price of crude oil. The experience of Honda, Nissan, and Southwest Airlines refer to the obligation of managers to analyze in detail the long-term validity of strategies to reduce risk in supply chains before their implementation.

Conclusion

Globalization is one of the most complex phenomena that affect virtually all segments of the economy. This term indicates the growing economic interdependence of countries worldwide, which can be realized by: increasing volume and variety of international transactions of goods and services; freer international capital flows; and faster and wider distribution of technology. Globalization of business enables companies to increase the level of integration and coordination of their activities and resources, and to conquer the markets of different countries.

Globalization is a representative or a generator of various processes, actions, and trends within the supply chain. Measuring the impact of globalization on the functioning of processes and activities in the supply chain is a complex research problem.

The world has become a global village with related companies and their supply chains. In order to survive fierce competition, companies today need to direct operations beyond the borders of their home countries and to control their costs. Cost control generally means reduction in the number of unprofitable business units and focusing on core competencies (core business). Thus, offshoring parts of the value chain in countries with low costs and outsourcing parts of the value chain – especially those cataloged as secondary activities, such as logistics – are generally accepted ways of organizing business today.

Due to the global spread of digital technology, consumers will pay more for extra services, rather than require lowering their prices. There will be an increase in the complexity of the supply chain towards *upstream* segments. Therefore, supply chain managers will have to apply different strategies to increase their responsiveness.

Globalization significantly increases managers' responsibilities. Due to globalization, the spectrum of risks faced by supply chains is wider than ever. In order to mitigate them, companies must have contingency plans.

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