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SUPPLY CHAIN MANAGEMENT: WORLD'S COMPANIES EXPERIENCE¹

***Abstract.** The article covers the study of the biggest and strongest world companies with the best supply chains. The reason is that nowadays unique supply chain can be competitive advantage for the enterprise. Strong supply chain can help to minimize costs, reach new customers, maximize profit, etc. In the article collaboration of the supply chain and its performance drivers (production, inventory, location, transportation and information) is performed; strengths and trends that can affect supply chains in the future are defined. Based on ranking results of Gartner, Inc. 2017 supply chain leaders in the world are highlighted. In 2017 such companies as Unilever, McDonald's, Inditex had the best supply chains, and perennial supply chain leader Amazon has become "supply chain master". According to the supply chains' analysis (Amazon, Inditex (brand Zara) and Unilever) it was defined that each company builds its own supply chain, which is based on specific key elements. So, for example, for Amazon the most important elements of supply chain are warehousing, products' distribution, own logistics, own production; Zara while constructing its supply chain focuses on such key elements: combination of manufacturer and retailer functions, fast response to trends, low inventory level, environmental responsibility, products' distribution; Unilever bases its supply chain on such elements as sustainable power utilization, environmental responsibility, strategic partnerships all across the world, own logistics, blockchain development, supply chain transparency and products' distribution.*

Keywords: supply chain, supply chain management, element, products' distribution, fast fashion, sustainability

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Introduction. Nowadays modern business functions in the conditions of globalization, in so-called “globalization environment”. Current conditions require the restructuring of traditional approaches to the enterprises’ functioning. For enterprises’ survival on the market, it is important to develop and implement a new competitive strategy. One way for enterprise to rebuild outdated management models and become “global” is to develop own supply chains.

The importance of the supply chains arises today. At the world level, more and more enterprises understand that it is impossible to function effectively without well-established links.

The concept of supply chain management in theory and practice was examined by many scientists – Christopher M.L. [Christopher, 1992], Chukhrai N.I. [Chukhrai, 2009], Cooper M.C., Lambert D.M., Pagh J.D. [Cooper and oth., 1997], Krykavskiy Ye.V. [Krykavskiy, 2016], Oliver R.K., Webber M.D. [Oliver, Webber, 1982], Stock J.R., Boyer S.L. [Stock, Boyer, 2009], etc. These scientists in researches focus on various aspects of supply chain management. For example, a number of scientists focus on the supply chains’ benefits (their ability to meet consumers’ needs and demands, to create additional value, to reduce costs).

In particular, Dubey and Ali [Dubey, Ali, 2013] state that supply chain management may be defined as the management of upstream and downstream associations with vendors and customers to provide better customer value at least cost to the supply chain.

Machowiak [Machowiak, 2012], indicates that SCM is a methodology of improving the business processes, making them more resilient, more agile and as a result, more competitive; the main function of SCM is to improve the product or service competitiveness.

Chopra and Meindl 2001 [Chopra, Meindl, n.d.] note that supply chain management involves the flows between and among stages in supply chain to maximize total profitability.

Some scientists consider SCM as a process (coordination, orientation on material, financial or informational flows, integration, partnership, activity). In particular, La Londe and Masters [La Londe, Masters, 1994] state that supply chain strategy includes: “... two or more firms in a supply chain entering into a long-term agreement; ... the development of trust and commitment to the relationship; ... the integration of logistics activities involving the sharing of demand and sales data; ... the potential for a shift in the locus of control of the logistics process”.

Taking in account modern conditions of social consciousness increasing, more and more attention scientists focus on supply chains' sustainability and environmental friendliness.

In particular, Randall and Mello [Randall, Mello, 2012] note that the definition that "SCM is primarily responsible for managing the buying as well as managing the flow of orders and information" is no longer valid. Today all the related aspects such as improving customer service, mitigating supply chain risk, reducing wastes, improving new product design process and enhancing product service quality are treated as an integral part of supply chain management.

Vachon and Klassen [Vachon, Klassen, 2007] stresses that "supply chain management is increasing companies' dimensions; being efficient is not enough; companies are now looking for sustainable and environmental friendly supply chain".

Despite the wide range of publications based on that topic, practical aspects of supply chain management need more detailed consideration.

According to the above, the aim of the article is to investigate supply chains of the well-known companies in the world.

In general, supply chain includes the processes of materials and resources' supply, products' manufacturing and distribution. Its main task is to reconcile the above-mentioned processes, as well as to meet consumers' needs.

Each company creates its own unique supply chain. Supply chains can differentiate in width and length, number of suppliers and intermediaries, relationships between its participants. Each supply chain has its own set of requirements and problems. But there are 5 drivers of the supply chain performance [Hugos, n.d.]:

- production;
- inventory;
- location;
- transportation;
- information.

Some authors give more extended classification of Supply Chain Drivers, this classification consists of three logistical drivers and three cross-functional drivers [Hugos, n.d.]:

I. Logistical drivers

1. Facilities;

- 2. Inventory;
- 3. Transportation;

II. Cross-functional drivers

- 1. Information;
- 2. Sourcing;
- 3. Pricing.

The supply chain is a complex concept that covers the entire process of product or service manufacturing and its distribution to the end customers in accordance with their needs. Despite the uniqueness of supply chains, there are a number of processes that are common to each chain and provide a clear coordination between its links. Such coordination helps to increase supply chain efficiency. Based on the scientific literature analysis, collaboration of the supply chain and its performance drivers is shown on the Figure 1.

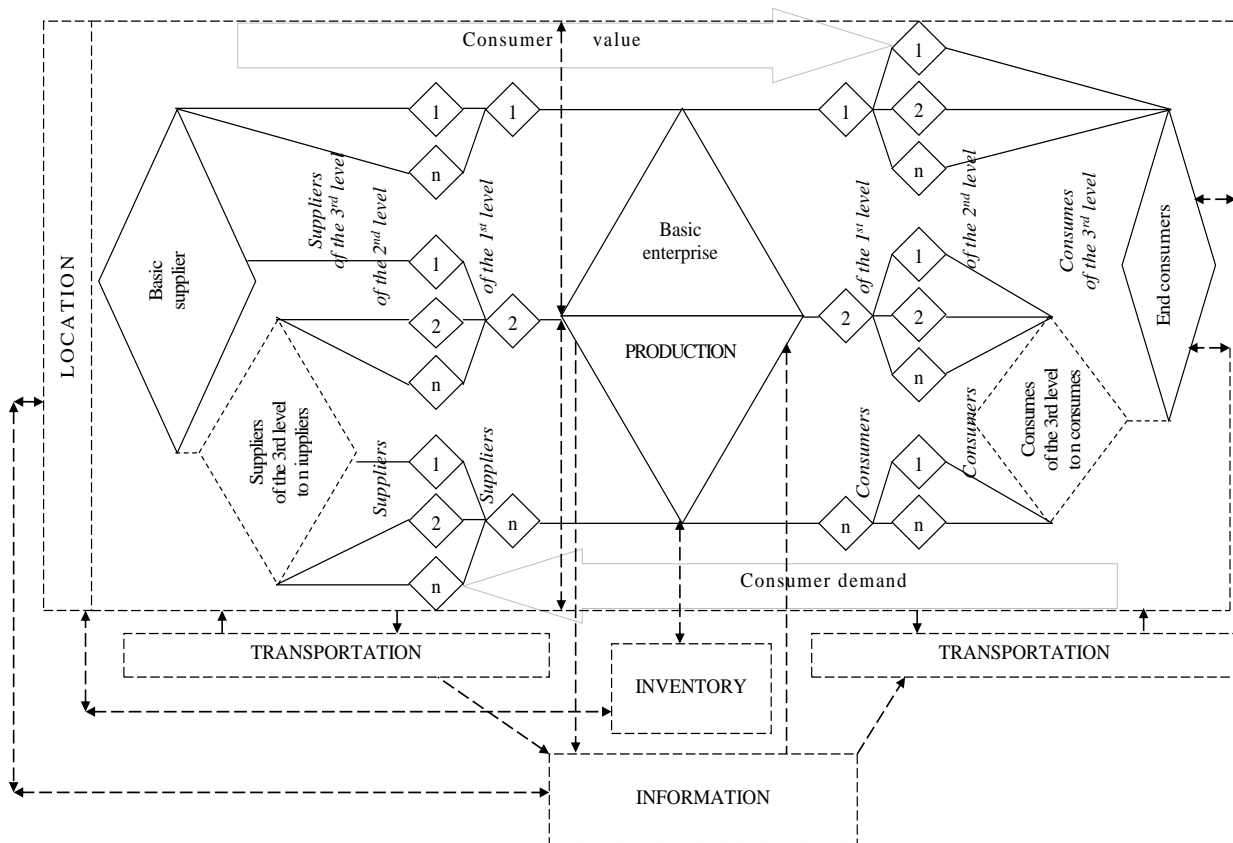


Fig. 1. Collaboration of the supply chain and its performance drivers
(developed by the authors)

The development of the supply chains is rather difficult task that requires considerable effort from the enterprise. But despite this, supply chain affects the efficiency of the enterprise’s functioning in the market and ensures its competitive advantages.

It is also important to note that not only performance drivers (production; inventory; location; transportation; information) affect the supply chain. Also, it is necessary to consider a number of factors and trends that in the long run can require supply chain modification (Figure 2).

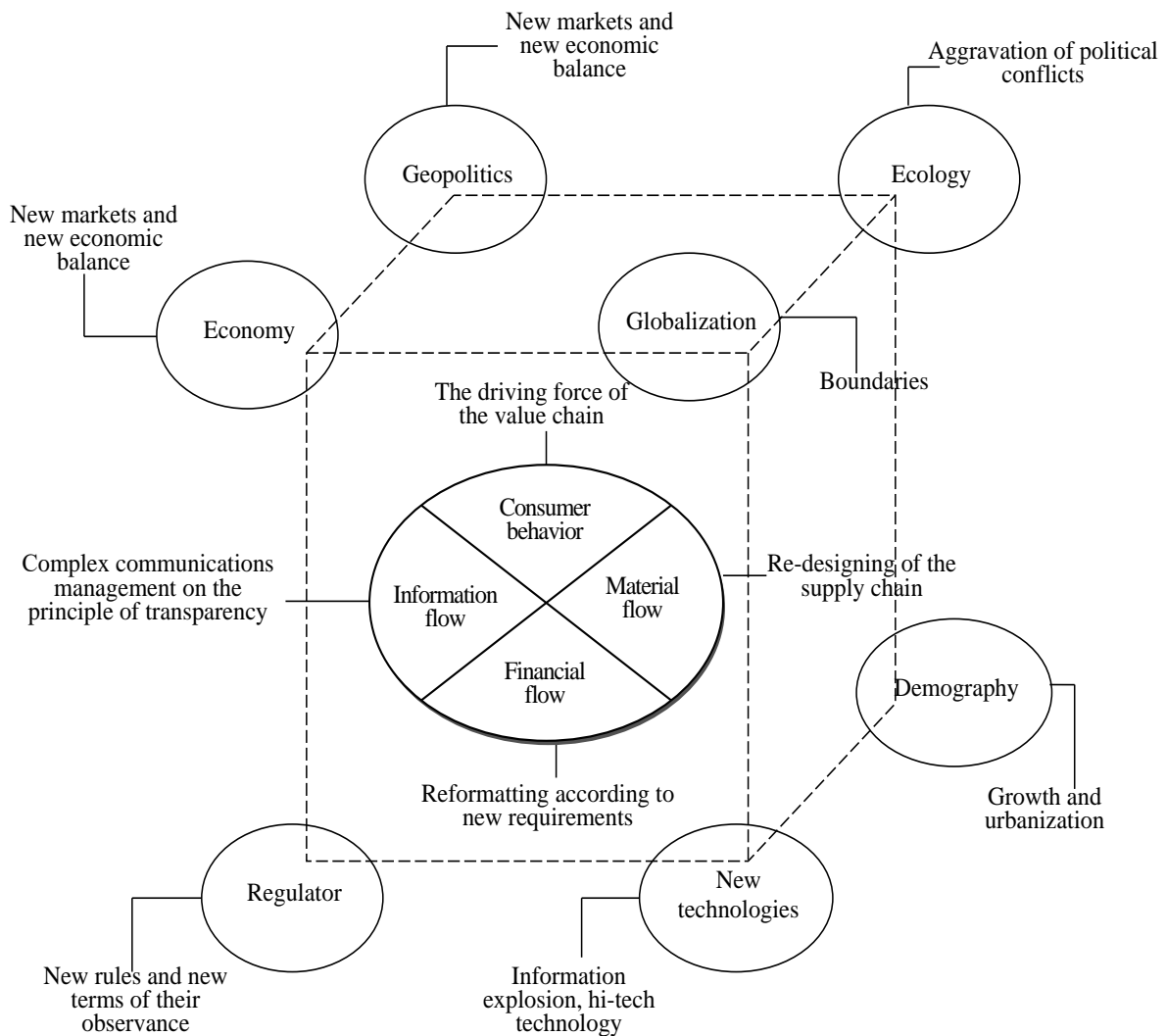


Fig. 2. Strengths and trends that can affect supply chains in the future
(developed by the authors on the basis of [Future, 2016])

Changes of external forces in the future are inevitable. Enterprises should identify and consider the impact of external forces on their businesses and form right supply chains.

Each year, the opportunities and advantages of efficient supply chain management are expanded and improved. It makes possible to compete in a variable operating environment. Therefore, it is important to monitor the main trends in the SCM development and form a common vision of the SCM concept in the future.

Each year Gartner, Inc. assess supply chains of the biggest and strongest world companies to identify supply chain leaders and highlight their best practices. The final list for assessment by Gartner is typically in the region of around 300 companies. Gartner's Assessment contains quantitative and qualitative assessment. The quantitative part of the Supply Chain Top 25 is comprised of four following metrics: 1) return on assets (ROA) (net income / total assets using a 3-year weighted average); 2) inventory turns (cost of goods sold / inventory); 3) revenue growth (change in revenue from prior year); 4) corporate social responsibility (index of third-party CSR measures looking at their commitment and success in socially and environmentally responsible supply chains; CSR is an additional aspect of supply chain leadership) [Why, 2017].

The qualitative part of the Supply Chain Top 25 is opinion-based, two independent panels are used: the global peer panel (comprised of customers and suppliers) and the Gartner analyst expert panel [Gartner Supply, 2018]. Qualitative assessment allows to identify the leadership aspect – the ability of the business to share their best supply chain practices with the wider supply chain community.

In general, this approach allows to find out the strength of company's supply chain, for example its higher service or lower turns strategy [Gilmore, June 1, 2017].

The Gartner Supply Chain Top 10 for 2016 and 2017 are given in Table 1.

Table 1. The Gartner Supply Chain Top 10 in 2016 and 2017
(developed by the authors on the basis of [Gartner Announces, 2017; Gilmore, June 1, 2017])

Company	Composite Score		Peer Opinion (25%)		Gartner Opinion (25%)		Three-year weighted ROA (20%)		Inventory turns (10%)		Three-year weighted Revenue Growth (15%)		CSR Component Score (15%)	
	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017
Unilever	5.84	6.39	1841	2074	632	649	10.8	10.2%	6.9	6.8	3.6	1.9%	10.00	10.00
McDonald's	5.54	5.27	1754	1264	493	442	13.2	13.9%	156.0	174.5	-4.0	-4.2%	3.00	3.00
Amazon.com	5.34	*	3356	*	582	*	0.56	*	8.4	*	20.4	*	0.00	*
Inditex	4.42	4.98	1212	1192	283	337	16.7	16.3%	3.9	3.7	11.2	12.0%	9.00	10.00
Cisco Systems	4.21	4.82	1158	1018	510	524	8.2	8.3%	11.2	13.5	2.3	0.8%	5.00	10.00
H&M	4.50	4.63	833	901	189	208	25.3	22.0%	3.5	3.0	16.3	12.5%	9.00	10.00
Intel	4.62	4.42	1112	952	496	486	11.4	10.5%	4.3	4.0	1.1	4.6%	9.00	7.00
Nestlé	3.68	4.10	1251	1159	257	345	8.9	7.9%	5.2	5.1	-1.1	-0.6%	10.00	10.00
Nike	3.58	4.07	1393	1290	205	207	14.7	16.2%	3.9	3.8	9.7	7.9%	4.00	6.00
Colgate-Palmolive	3.43	4.03	880	843	323	313	15.1	18.0%	5.2	5.0	-3.5	-4.9%	3.00	6.00
Starbucks	3.55	3.80	1069	926	188	143	16.9	20.3%	6.8	11.1	13.8	12.7%	4.00	4.00

* – “supply chain master”

As it's seen from Table 1 perennial supply chain leader Amazon (was ranked number 3 in 2016) joined Apple and P&G in qualifying for the “supply chain master” category (“hall of fame”), which Gartner introduced in 2015 to recognize sustained leadership over the last

10 years (company needs to have attained top-five composite scores for at least seven out of the last 10 years) [Gartner Announces, 2017].

Let's consider in more details key elements of the supply chains of such companies as Amazon, Inditex (brand Zara) and Unilever.

Amazon is online shop with the biggest selection of books, magazines, music, DVDs, videos, electronics, computers, software, apparel & accessories, shoes, jewellery, tools & hardware, housewares, furniture, sporting goods, beauty & personal care, broadband & dsl, gourmet food, etc. [Amazon]. Nowadays Amazon becomes one of the world's most powerful retailer. This is largely achieved through the introduction of innovations in the supply chain.

The key elements of the Amazon's supply chain are:

- *warehousing*. Amazon pays particular attention to optimizing warehousing processes. The reason is that the speed of products movement to the customers much depends on how well they are placed and stored. Worldwide Amazon has 493 warehouses covering about 180 square million feet. In addition, automation of storage and distribution processes is provided in all company's warehouses. Amazon has 45,000 robots across 20 distribution centres [Banker and oth., 2018];
- *products' distribution*. Prime customers delivery, one-day delivery, first class delivery and free super saver delivery are some of the common delivery options available to Amazon customers. In particular, Amazon's Prime Now same-day delivery service has expanded to more than two dozen U.S. cities and London, and includes delivery from local restaurants and stores in addition to company-owned warehouses [Aronow and oth., 2016]. Also, Amazon is about to do have shipping hub at the Cincinnati airport, with more than 200 flight departures and landings per day to be scheduled [Gilmore, July 13,2017]. Also, Amazon is about to use drones to deliver products in the future (despite it's very expensive move, but it will increase sales)and implement Dash Button (Dash Button is a small wireless device about the size of a pack of gum). In addition to the above, Amazon has opened its first "Go" convenience store in Seattle, in which consumers literally "grab and go" with items without a stop at a point of sale register, using a combination of smart phone apps and unspecified technologies in the store [Gilmore, July 13, 2017];
- *own logistics*. Nearly 82% of Amazon's sales comprise of third-party sellers, but at the same time Amazon does not fit into the suppliers' logistics but adapts the cooperation with them under its own logistics. Amazon uses both push and pull strategies: Amazon uses pure push strategy for the products it stores in its

warehouses which are strategically placed; Amazon uses a pure pull strategy to sell the products from the third-party sellers. To cooperate with third-party sellers Amazon is actively implementing “Vendor Flex” program. That program creates a win-win situation for Amazon and its supplier. The operation works as follows: the supplier picks products according to purchase orders from Amazon, and then moves the pallets into Amazon’s fenced-off area of the warehouse. Here, a team of Amazon employees sorts the products into outbound orders, packages them, and dispatches them to its customers [O’Byrne, 2016]. In addition, Amazon is constantly expanding the range of products offered to consumers. For example, the company is selling consumer staples. Though online demand is actually very low for these commodities, but the market of consumer commodities is big, so even few consumers currently attracted to online purchases of consumer commodities can increase company’s profit. In addition, the purchase by Amazon of the Whole Foods network has become a very important transaction that combined offline and online retailers. Since the deal was completed in August 2017, Amazon has firmly put its stamp across Whole Foods’ 473 stores. Amazon takes big costs out of the grocer’s supply chain and uses the stores as a platform for e-commerce pick-up and delivery services [Gilmore, July 13, 2017]. Now Whole Foods customers see such changes made by Amazon: 1) price cuts; 2) online shopping and delivery (any of Whole Foods’ in-house brands, including “365 Everyday Value”, are now available to buy on Amazon’s website); 3) prime exclusive deals; 4) Hello Echo (Amazon was quick to sell its tech products within Whole Foods stores); 5) new ad campaign with the slogan “Whatever Makes You Whole” [Valinsky, 2018];

– *own production*. Amazon understood that many of the third-party products it is selling to customers could be produced at much lower prices. Therefore, Amazon is actively working on own product’s manufacturing, which allows to sell them cheaper.

Thus, Amazon in its supply chain focuses on the processes of products’ distribution, including the process of **warehousing**.

Inditex is one of the world’s largest fashion retailers. It aims to create beautiful, ethical, quality products. Inditex now contains eight brands – Zara, Pull&Bear, Massimo Dutti, Bershka, Stradivarius, Oysho, Zara Home and Uterqüe. Each of brands has a unique personality and exclusive design teams who know their customers inside out [Inditex]. We’ll consider Zara brand and its supply chain more detailed.

The key elements of the Zara's supply chain are following:

– *combination of manufacturer and retailer functions.* Zara at the beginning of its activity decided to locate most of the production facilities geographically close (50% of all items are manufactured in Spain; 26% – in the rest of Europe; 24% – in Asia and Africa). It allows to provide flexibility to production processes, the ability to quickly respond when demand for a product suddenly takes off; proximity of suppliers. The production location in Europe gives such advantages [O'Byrne, 2016]:

- Zara can manufacture higher quality garments in Europe;
- Zara doesn't have to foot high transportation costs to ship products from Asia;
- Zara can get its merchandise into European and American stores very quickly;

– *fast response to trends.* Zara has planning and analytics team that sorts through real-time sales trends to inform future design and production. This team creates up to 1000 designs every month based on store sales and current trends. Each new product development team has its own designers, sales, procurement and production planners.

It helps to streamline the internal communication a lot and work faster and more effectively;

– *low inventory level.* The company follows the rule: less inventory in the supply chain and less need to finance that inventory with working capital. Production of small batches of goods helps to keep inventory levels low;

– *environmental responsibility.* Zara is known for its energy saving efforts and techniques, as well as their minimization and efficient waste management. Inditex has also set a goal to run 100% eco-efficient stores by 2020. The new Zara flagship store in Manhattan tracks sustainability measures across all of its processes and will consume 30% less energy and 50% less water compared to a conventional store [Aronow, 2016];

– *products' distribution.* Since Zara believes in time-based competition, automation is the key to help them to increase the speed and the accuracy of the operations. So, to store and distribute its products Zara has Central Distribution Centre with very strong IT systems [Zara's, 2014]. Also, distribution advantages are received thanks to production facilities placing – 76% of all items are manufactured in Europe. In addition, all the clothes produced in Asia and Africa (24% of all items) are shipped back to Spain, the central location. From here, it is distributed to different

countries and stores and distribution is based on individual requirements and needs of the particular locality.

Thus, Zara's supply chain is focused on the **quick introduction of new products** to consumers. Zara follows the rule: manufacture products in minimal lots and just-in-time and replenish outlets with small but frequent shipments.

Unilever produces more than 400 brands all over the world. Its products include food, beverages, cleaning agents and personal care products.

The key elements of the Unilever's supply chain are following:

– *sustainable power utilisation*. Unilever uses “four R approach” – reducing, reusing, recovering or recycling – to achieve zero waste. Also, company works over treating waste as a resource with alternate uses, such as converting factory waste to building materials or composting food waste from staff cafeterias. Unilever has made significant investments in regional operational centres and improving its product life cycle management. In addition, by 2020, Unilever expects to sustainably source 100% of its raw materials, even those used for packaging [Aronow, September 19, 2016];

– *environmental responsibility*. Unilever believes that sustainability is a viable growth strategy for fast-moving-consumer-goods brands. So, Unilever wants to double in size as a company by 2020, while leaving a smaller carbon footprint and placing less demand on the environment than it does today. Unilever has committed to becoming carbon positive in its operations by 2030. Another important area is Unilever's effort to improve the lives of drivers and help to reduce the environmental impact of trucking. The company has partnered with Convoy on a multi-year trucking agreement to help advance Unilever's operations. Unilever selected Convoy because of its commitment to superior service, driver safety and ongoing development of innovative technology solutions that streamline procurement, improve on-time delivery, empower drivers and deliver savings through operational efficiencies [Slack, 2016];

– *strategic partnerships all across the world*. An important part of Unilever's success is compliance with the principle: all partners must be willing and able to embrace the same commitment. This means ending relationships with those who don't conform to the same principles and working closely with governments to get an idea of working conditions, as well as startups who introduce new innovations that drive sustainability [Ovenden, n.d.];

– *own logistics*. Unilever has stopped outsourcing logistics and brought it in-house. Unilever is in the process of in-sourcing services that have been done by 3PLs to reduce carbon and costs [Ovenden, n.d.], company adjusts its logistics in the area of sustainability. For example, Unilever tries to ensure the load capacity of the vans. To achieve this goal, Unilever is actively cooperating with such companies as Nestlé and Procter & Gamble [Marcel te Lindert, 2016]. In addition, to provide more control over its own logistics and supply chain, Unilever has a European “Control Tower”, which is responsible for ensuring complete visibility with regards to their European logistics. “Control Tower” is end-to-end logistics management system located in Poland. “Control Tower” is aimed to coordinate thousands of transport movements of Unilever products across road, rail, sea and air efficiently reducing CO₂; to improve customer service and to reduce costs [Gavin van Marle, 2016; Unilever, 15 April, 2013; Why, 2017]. Also, Unilever has built an African Transport Control Tower. Control Tower operates from South Africa to manage logistics strategy and execution into Africa. Control Tower implementation helped to improve transportation management service thanks to its ability to leverage regional capability and scale; reduce costs and improve customer service levels [Transnova, n.d.];

– *blockchain development*. Unilever is about to set up a blockchain with Nestlé, Dole and Walmart to add product data for all transactions. It is made to reduce bullwhip effect – in which a small fluctuation in consumer demand can have a huge impact at the beginning of the chain. It is made in collaboration with computing giant IBM. In theory, such blockchain can at last integrate the flows of goods, information and money, to make it quicker and easier to see where products have come from and what has happened to them. As well as improving food safety, blockchain is about to automate billing, invoicing and auditing [Churchill, 2017; 22]. The first practical applications of blockchain was made by Unilever to manage transactions within its tea supply chain. The blockchain project involves consumer products manufacturer Unilever as well as British grocery retailer Sainsbury’s and packaging company Sappi in conjunction with three banking firms – BNP Paribas, Barclays and Standard Chartered – plus several technology startups. The consortium is developing a system for tracking and verifying contracts for up to 10,000 farmers in Malawi that supply tea to Unilever and Sainsbury’s [Unilever, 19 February, 2018];

– *supply chain transparency*. An example of such supply chain transparency is that Unilever was the first consumers goods company to publish details, having disclosed the location of more than 1,400 mills and over 300 direct suppliers of the oil used in products from snacks and soaps to cosmetics and biofuels [Unilever, March 1, 2018; Unilever, 19 February, 2018]. For Unilever such transparency and the ability to trace palm oil are vital in addressing deforestation and human rights abuses;

– *products' distribution*. Unilever has developed five distribution hubs in Europe with a view to global expansion in order to consolidate shipments and therefore reduce their carbon footprint [Why, 2017]. All finished goods are shipped through these hubs, which serves to consolidate shipments between customers, factories, and suppliers [Trebilcock, 2015]. In addition, company is working on reducing CO₂ emissions in transport and distribution systems. For example, in China Smart Transportation Programme was launched. According to this programme more rail is used than road. It helps to reduce CO₂ emissions and costs while transporting goods just as fast as on road. Also, in 2016 “Big Bang” project was launched in Europe. This project helped to drive efficiency in logistics through switching to multimodal transportation, optimising truck filling and ensuring the correct temperatures for trucks [Unilever].

Thus, it can be argued that the basis of the Unilever supply chain is **sustainability**. To achieve supply chain sustainability Unilever works on sourcing sustainability, distribution hubs localisation, logistics “control tower” creation, and other processes and actions which form the central tenets of Unilever’s Sustainable Living Plan. In addition, to achieve sustainability, Unilever now produces 18 “sustainable living” brands including Dove, Lipton, and Hellmann’s, which all have a clear purpose relating to a social or environmental concern [Unilever].

A summary Table with key elements of the supply chains of the leading companies in the world is below.

Table 2. Key elements of supply chains of Amazon, Zara and Unilever

Key success element	Company		
	Amazon	Zara	Unilever
warehousing			
products' distribution			
own logistics			
own production			
combination of manufacturer and retailer functions			
fast response to trends			
low inventory level			
environmental responsibility			
sustainable power utilisation			
strategic partnerships all across the world			
blockchain development			
supply chain transparency			

According to the Table, 2 each company builds its own supply chain, which is based on specific key elements. So, it can be argued that there is no unique form of successful supply chain. And supply chain development is a time-consuming and labour-intensive process that requires detailed knowledge of the company's specifics and specifics of its micro- and macroenvironment.

Conclusions. Consequently, in prospect cooperation between entrepreneurship and supply chain is very important and compulsory. In the coming years, enterprises will enter new era of sectoral cooperation, and it will become a key factor for the entrepreneurial activity success. Such reorientation will require a re-thinking of the areas of competitive advantages. Sectoral cooperation will be an important lever of influence on the government as it will stimulate it to form a favourable legislative framework for doing business.

In such conditions supply chain management system will also need to be improved. And the new principle of supply chain management will include not only efficiency, but also the potential for innovation and collaboration.

Further research will be conducted on a detailed study of Supply Chain 4.0.

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