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THE ROLE OF LEAD-TIME CONCEPT IN MANAGING THE FASHION SUPPLY CHAINS

ULOGA LEAD-TIME KONCEPTA U UPRAVLJANJU LANACA SNABDEVANJA U MODNOJ INDUSTRIJI

JEL KLASIFIKACIJA: M20, M21, M30, M31

Abstract:

The supply chain management represents one of the most influential contemporary business philosophies, which occupies the undivided attention of the expert and scientific public in the last forty years, since the moment of its creation. During that time period, under the influence of globalization, technology development and ever more intensive competition, the increase of speed flow of goods and information through the supply chain is becoming the imperative of modern business. Therefore, many business concepts are created with the aim of improving business connections among the participants of the supply chain, out of which the most prominent one is the concept of lead-time. The lead-time concept (time needed for the realization of the order) refers to the total time which passes between the buyer's order and procurement of first materials based on that order by a precise company, up to the moment of performing payment to the company by the buyer, based on the obligation it has. Also, the stated concept has a practical usage in managing the supply chains of different industries. Precisely

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the influence analysis of the lead-time concept in managing the fashion industry supply chains is the subject of basic preoccupation of this paper.

The very paper is divided into three parts. After the introductory notes, the focus of the first part of the paper is the explanation of the essence and characteristics of the lead-time concept, as well as its importance in managing the supply chain. The second part of the paper is dedicated to the role of lead-time management within the fashion industry, where an analysis is carried out about the relevance of design and the use of the agile supply chain with the aim of securing quick answers to customer demands. Within the last, third part of the paper, the business model of the H&M company is analyzed as a case study, since this company bases its operations on the concept of lead-time. The aim of the paper is to analyze the importance and the usage effects of the lead-time management in contemporary turbulent surroundings and business, from both the aspects of theoretical acknowledgements and the precise business example.

**KEY WORDS:****SUPPLY CHAIN MANAGEMENT, LEAD-TIME MANAGEMENT, FASHION INDUSTRY, H&M.**

Apstrakt: *Koncept lanca snabdevanja predstavlja jednu od aktuelnih poslovnih filozofija, koja zaokuplja pažnju stručne javnosti i prakse u poslednjih četrdesetak godina, od svog nastanka. U tom vremenskom periodu, pod uticajem globalizacije, razvoja tehnologije i sve intenzivnije konkurencije, povećavanje brzine protoka roba i informacija kroz lanac snabdevanja postaje imperativ savremenog poslovanja. Stoga, kreiraju se mnogi poslovni koncepti u cilju unapređenja poslovnih veza između učesnika u lancu, od kojih je vodeći te vrste lead-time. Lead-time koncept (vreme za realizaciju porudžbine) odnosi se na ukupno vreme koje protekne od porudžbine kupca i nabavke prvih materijala na osnovu nje od strane konkretnog preduzeća, pa do momenta izvršenja plaćanja preduzeću od strane kupca, na osnovu obaveze koju on ima. Takođe, pomenuti koncept ima i praktičnu primenu u upravljanju lancima snabdevanja različitih industrija. Upravo je analiza uticaja lead-time koncepta u upravljanju lancem snabdevanja u modnoj industriji predmet osnovne preokupacije u ovom radu.*

Sam rad podeljen je u tri dela. Nakon uvodnih razmatranja, fokus prve celine rada jeste na objašnjenju suštine i karakteristika lead-time koncepta, kao i njegovog značaja u upravljanju lancem snabdevanja. Druga celina rada posvećena je ulozi lead-time upravljanja u modnoj industriji, u kojoj se razmatra relevantnost dizajniranja i primene agilnog lanca snabdevanja s ciljem obezbeđivanja brzog odgovora na zahteve kupaca. U poslednjoj, trećoj celini rada analizira se poslovni model kompanije H&M, koji se upravo zasniva na pomenutom konceptu. Cilj rada je da se iz ugla savremenih teorijskih shvatanja, a potom i kroz konkretan poslovni primer, analizira značaj i prikažu efekti primene lead-time upravljanja u današnjem turbulentnom okruženju i biznisu.

**KLJUČNE REČI:****UPRAVLJANJE LANCEM SNABDEVANJA, LEAD-TIME UPRAVLJANJE, MODNA INDUSTRIJA, H&M.**

1. INTRODUCTION

The appearance of new commercial formats, the presence of more and more comprehensive information, communication technologies, as well as the continuous change of the conditions of people's lives, had major implications on customer behavior.⁴ Music, film, television and other mass media are constantly influencing the more frequent change of the demand for different types of products, which cannot be accurately anticipated. The contemporary market is increasingly becoming a complex mosaic of the networked relationships among different partners in the supply chain, without the strong boundaries among companies, with the new market structure and new social values. In these conditions, strategies are created, based on the research of motives driving the customers to shop, and also based on the knowledge of the key determinants of the shopping process, as well as the reduction of time that passes since the moment of the reception of the request/order by the customer, until the delivery of the goods themselves (TBC- time based competition). This allows the new opportunities for the accomplishment of the comparative advantages, with the aim of delivering successful performance of the market actors within the domestic and international market.

2. THE IMPORTANCE OF LEAD-TIME CONCEPT IN SUPPLY CHAIN MANAGEMENT

The leadership in time has always been considered as one of the most valuable "weapons" of the competition in the business environment. Many companies, however, were very narrow-minded regarding this issue, so the notion of time compensation was frequently connected to the production cycle exclusively.⁵ Only in 1988 did the Executive Director of Boston Consulting Group, *George Stalk, Jr.* use for the first time the term time-based competition (TBC) in his article *Time: the Next Source of Competitive Advantage*, where he emphasizes that the crucial component of the strategic management will actually be the correlation between time, as one important factor of the competitive advantage of the company and the success in the satisfaction of the customer's needs. Consequently, in 1990 the researcher Thomas used a phrase in his work—total amount of time needed for the completion of the whole work cycle (TCT – total cycle time). In this work, he states that the emphasis is exactly on the first word of the mentioned phrase—total, highlighting the importance of the implementation of the so-called short cycle of the activity completion in all segments of the company. He indicates that thereby, the productivity of the complete business system of the company would be much higher if the management's focus was exclusively on the acceleration of the production process.⁶

It is important to make a distinction between the total time for the completion of the total work cycle (TCT – total cycle time) and the time for the realization of the order (lead-time). Namely, the first phrase represents the time that passes since the initial until the final point of the work process in one production unit, on the basis of the customer's spe-

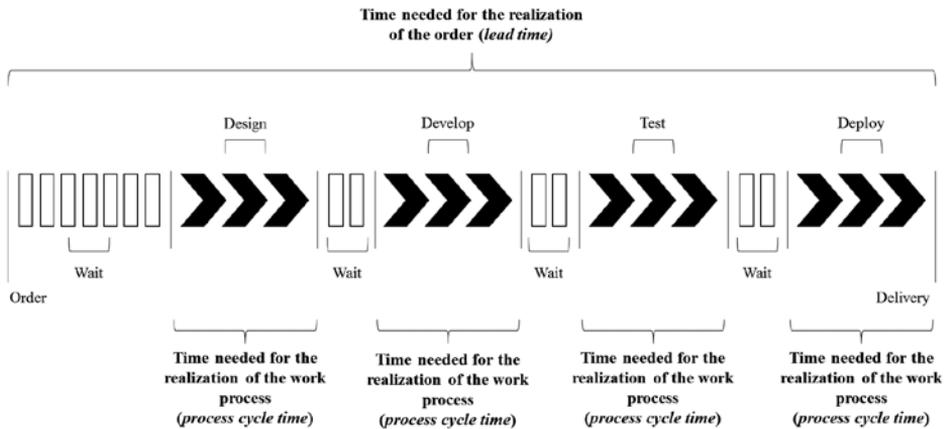
4 Schroder and Zaharia (2008), p. 458.

5 Stalk and Hout (1990), p. 19.

6 Thomas (1990), p. 22.

cific request. According to TCT, only the time spent on the realization of specific activities is measured, while the potential halts or delays of activities are not included. The other phrase represents the total time that passes since the reception of the request/purchase order of the customer until the delivery of this product to the customer. The comparison of these two phrases is presented in the following example.⁷

► PICTURE 1: THE COMPARISON BETWEEN TCT | LEAD-TIME



Source: Lean flow metrics (2017)

In order to implement the business strategy in an adequate manner, with the focus on the reduction of time for the realization of the order (lead-time), with simultaneous satisfaction of the customer needs, it is necessary to make an adequate concept of the supply chain, which would include the integration and high coordination among all members of the chain. Thereby the opportunity for the mutual competition improvement, profitability, risk reduction and improvement of the customer service arises.

The precondition of such a supply chain, however, is a successfully established management of the supply chain, responsible for making a number of relevant decisions related to the material flow (from the input of raw material until the finished goods output), design flow (from the general concept, via the prototype until the final design of the product), information flow (with the aim of facilitating the coordination and integration in the supply chain) and cash flow (the activities in the supply chain must be financially supported in order to be accomplished).⁸ This contributes to the improvement of the organization performances, higher level of flexibility and faster information and product flow through the supply chain, on the basis of which the positive implications for the time of the order realization (lead-time) in the business system are achieved.⁹ There are two perspectives of perceiving the concept of lead-time (the marketing and organization perspectives), which will be elaborated in greater detail continuing.¹⁰

7 Lean flow metrics (2017)

8 Chopra and Meindl (2007), p. 9.

9 Mason-Jones and Towill (1998), p. 101.

10 Christopher (2005), p. 152.

2.1. The order to delivery cycle

From the marketing perspective, the time that passes from the order reception of the customer until its delivery (order cycle time- OCT) is of crucial importance. In today's turbulent environment it is not relevant only to shorten the stated period of time, but also to provide its long-term consistency. Also, the companies should pay attention to the reliability of the delivery itself, as a very important determinant of customer satisfaction. A specific cycle consists of various phases which can be seen in the picture below.¹¹

► PICTURE 2: THE ORDER CYCLE

Customer places an order	Order entry	Order processing	Order assembly	Transport	Order received
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Source: Christopher (2005), p. 150.

For each of the stated phases it is necessary to have the time for their completion influenced by a few factors such as: the emergence of bottle necks, insufficiently efficient processes in the business system and fluctuations in the number of orders during the time. Therefore, by inappropriate management may have as a consequence the decrease of reliability in terms of the delivery of goods to the customers, which has a direct reflection to the final success of the specific company. Also, there might be some situations when, upon the request of the customer, it is not possible to provide a satisfactory product within the internal capacities of the company, but is necessary to engage external partners for that. At that time, there is a much higher risk of the appearance of different variations in total time for the realization of the order and the management's responsibility is even bigger.

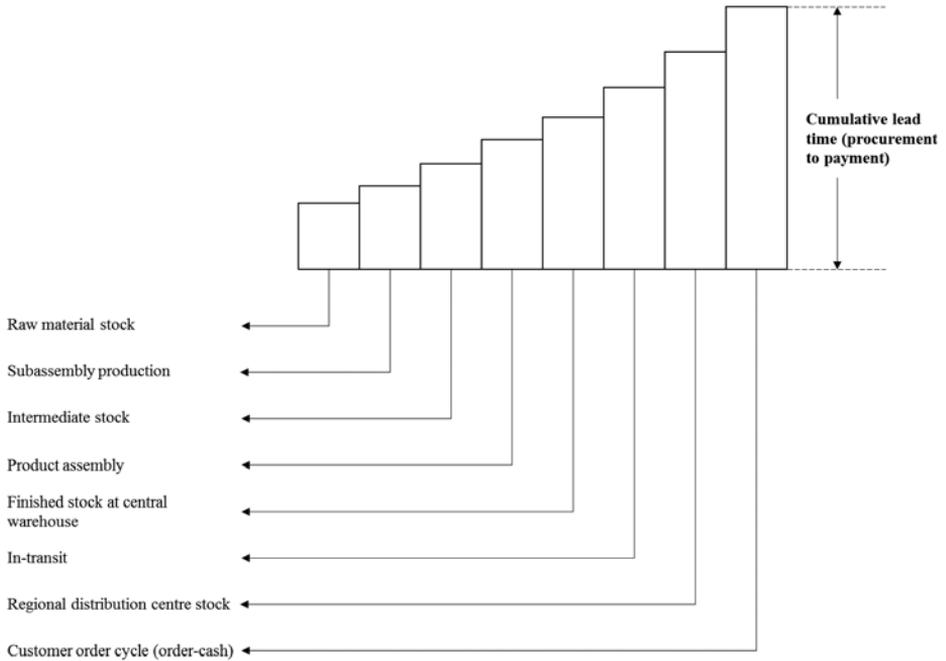
2.2. The cash to cash cycle

The period of time, from the moment the decision of the material and components procurement based on the customer's order was made, through the production, final processing, mounting until the physical distribution and final delivery, represents the number of days the company needs to finance with its own or borrowed capital, unless the advance payment was agreed upon. Therefore, from the perspective of the organization, the time for the order realization (lead-time) refers to the total time that passes from the customer order and procurement of the first materials based on the order by the specific company until the moment when the payment to the company by the customer based on his/her obligation is made. The following illustration represents the lead-time from the perspective of the organization with the cycle from the order reception until the moment when payment is made.¹²

¹¹ Christopher (2005), p. 150.

¹² Christopher (2005), p. 154.

▶ PICTURE 3: STRATEGIC LEAD-TIME MANAGEMENT



Source: Christopher (2005), p. 154.

3. THE ROLE OF LEAD-TIME MANAGEMENT IN THE FASHION INDUSTRY

The authors *M. Christopher, R. Lawson and H. Peck* in their work „*Creating agile supply chains in the fashion industry*“ defined fashion as a broader term than it is usually comprised by each product or market where a certain element characterized by a short living cycle exists. Consequently, fashion markets may be defined as complex open systems continually characterized with the high level of “chaos”, so it is very difficult to determine accurate forecasts regarding the fashion product demand. To sum up, the characteristics of this market are: (1) short living cycle of the product, (2) very unstable demand for fashion products, (3) low predictability of the demand, and (4) high level of impulsive shopping. Since fashion markets are the place of frequent changes, the success in the market of the companies is to a great extent predetermined by the organizational flexibility and possibility of the quick response to the customer request. It is one of the key reasons why the concept of lead-time has already been recognized as an important competitive tool in this industry.

3.1. Lead-time concept in the fashion industry

Within the lead-time concept three key times can be isolated as the ones by which the fashion companies should adequately be navigated with the aim of having a successful market performance. These are: *time to market*, *time to serve*, and *time to react*.¹³

Time-to-market – the time necessary to recognize a market opportunity, to create a product and prepare a service based on this opportunity that would be presented in the market. The companies that are fast in this process have a great opportunity to achieve the market success. On the other hand, the companies slow in this process have a double loss. Firstly, they will miss the opportunity to sell a significant amount of products in the market, when their demand is biggest. Secondly, when they present these products in the market, the demand will gradually decrease, which consequently leads to the emergence of the obsolescent stock.¹⁴

Time-to-serve – the time that passes from the moment when the company registers the customer order until the moment the customer is delivered the product, which fulfills his/her satisfaction. In the contemporary business environment the presence of the shift towards more frequent implementation of the strategy of the so-called “fast” fashion is noticeable, which leads to the reduction of the time period for the completion of all processes from the reception of the customer request until the delivery of goods, so as to have an adequate response to the market changes for a few weeks instead of months.¹⁵ The main characteristics and tendencies of the “fast” fashion concept are¹⁶:

The elimination of the phases in the supply chain – since the products are delivered to the retail shops, in frequent and short cycles, as a response to the latest wishes and expectations of the consumers, some activities in the process of the product development and quality control cannot be completed at the highest level. An example of such activity can be the test or fit session (the check whether the clothes fit the customer adequately or if it is comfortable during walking or performance of some activity). On the other hand, the activities which do not add any value should be eliminated.

The shorter production processes – the orientation to constant changes of the production assortment requires serious reorganization of the process and business performance. An important role in this process is assumed by flexible production systems as results of the new technologies, contemporary techniques and methods, and labor organization. The robots, as a part of the new technology successfully fight the demands before them, complete the tasks in a quality manner and decrease the production price, and their project tasks constantly become more complex in terms of manipulative capabilities, movement speed, accuracy and repeatability, adjustability and energy savings.

The change of the approach to the logistics – it is inevitable as a consequence of the current global trends. Firstly, with the strengthening of the retail role the business collaboration is established and it insists on the policy of “dislocating” the stock situated with the

13 Christopher et al. (2004), p. 369.

14 Christopher et al. (2004), p. 371.

15 Bhardwaj and Fairhurst (2010), p. 167.

16 Barnes and Lea-Greenwood (2006), p. 262.

supplier. Secondly, the increasing number of companies are making decisions to move the production to the countries that abound in cheap labor force, primarily the East and South-East. Thirdly, the customers change the shopping habits more frequently as well as preferences among certain products. There is also the expansion and deepening of the sale assortment, which has direct implications onto the increase of logistic requests and problems.

Creating the partnership and forming the network in the supply chain – in the situation when in the fashion industry each year the number of seasons of the current products increases, for the survival within the market it is necessary to have strong partnerships in the supply chain. The business cooperation with a greater number of smaller suppliers is increasingly getting established. These suppliers possess flexibility and responsive organization structure, ready for quick responses in the turbulent environment.

Fashion retails strengthening – since different activities of retail stores are part of the actual sales process of the products and services to the final customers for the immediate consumption, the retail role is in constant increase process. Therefore, there are changes in the business model itself. With the aim of keeping the lowest possible level of stock, they are directed at the search for suppliers who can very quickly provide the delivery of new and quality products in accordance with the demand changes of the customers. This leads to the sale maximization during the season.

All processes are driven by the customer demand – the concept of “fast” fashion comprises the strategy, structure, culture and a range of operative procedures directed toward the integration of the companies into a common network, through a quick transfer of information and profitable sharing of activities. Specifically, the application of the strategy leads to the creation of a specific chain of values in which the decision-making process is based on the information concerning the demand.

The pressure on suppliers – the requests by which the suppliers are bound to shorten the time for the performance of work operations within the production and distribution, as well as the introduction of the flexibility and responsiveness principles with the aim of quick response to the change of the demand are already known. In future, however, the suppliers are expected to have continuous improvement of the quality control, the packaging process, labeling, etc.

Time-to-react – the necessary time to adjust the product or service in accordance with the change of demand. The challenge for most of the companies in today’s business environment, especially for those connected with the fashion industry lies in the determination of the actual demand. The actual demand refers to what customers request and buy from day to day, from hour to hour and it is of crucial importance to notice quickly the market changes and then to adjust the production assortment to them. It was the exact problem of the traditional business activities of most of the supply chains primarily lead by the demand forecasts and constant completion of the stock on the basis of these forecasts. By this type of management, certain parts of the supply chain were unable to see the actual situation within the market, so due to inaccurate forecasts, moving from one chain participant to another, upstream, there was an increase of the demand unit volume. Disproportion in the supply volume led to plugging in the chain, influenced the

quality of the business activity performance and finally, raised doubt concerning the functioning of the whole system. This is best known as the Forester's effect or the so-called bullwhip effect, due to similarities between the oscillating increase of demand and the whip movement.

3.2. The agile supply chain in the fashion industry

In the recent years the increase of interest in design and implementation of agile strategies in the supply chain has taken place. The idea of agility in the supply chain is based on the so-called "responsiveness" concept, i.e. the ability of the supply chain to provide a quick response to the consumer requests.¹⁷ The flexibility is recognized as the key characteristics of the agile supply chains. Apart from that, their features are also¹⁸:

The sensitivity to market changes – successful fashion companies tend to follow trends using different techniques. One of these is the terminals at the Point of Sale – POS, which enable collecting of a great amount of data on the daily basis. Furthermore, the use of sophisticated techniques of analysis, such as the factor and cluster analysis, techniques of data mining, and the application of artificial neuron measures, helps the collected data to become valuable.

Virtual integration –the partners within fashion supply chains should possess the features of strong connection, reflected in continuous exchanges of key information on the demand and sale, from the downstream chain part to the upstream. On the basis of the information, better availability of a product in the retail stores is provided, with lower safety stock and transaction costs.

Partner network basis – during the conceptualizing of the agile supply chains, agreements on collaboration with a bigger supplier base for a longer term are frequently made.

Process integration in the supply chain – in the fashion industry there is a larger number of entities included in various processes from the product design until its end on the shelves of retail stores. The coordination of the material and information flow represents a serious challenge. Therefore, the responsive supply chain demands high level of process integration, both in a specific company and externally, throughout the whole supply chain. There is a pressure to form connections, tighter business operations and trust, as key determinants of success. Especially in globally-oriented supply chains, featured by the geographic distance of business partners, the cutting edge software assume an important role. They cover different phases of the business process and accomplish the collection of information on customers to influence the procurement and production process faster and more efficiently. The most popular software types used by companies are¹⁹: Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), Supply Chain Management (SCM), and Knowledge Management (KM).

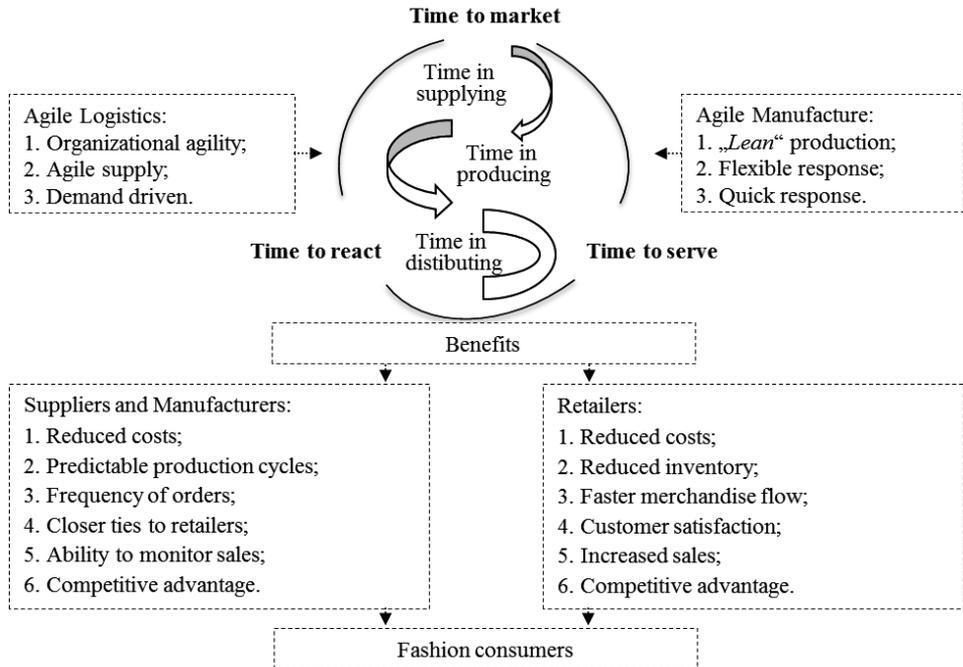
17 Christopher (2000), p. 39.

18 Čiarniene, and Vienažindiene (2014), p. 1015.

19 Shiemaker (2001). pp. 180.

Therefore, the characteristics of the conceptualizing of an agile and responsive supply chain are close collaboration with agile suppliers, through the process and information system integration. A good relationship with customers is cherished, the information on the actual demand is collected as much as possible and the information collected is distributed throughout the supply chain. Internal business activities are also based upon agility – formation of the multifunctional project teams directed toward a defined goal.

► PICTURE 5: CONCEPTUAL MODEL ILLUSTRATING AGILE AND RESPONSIVE FASHION SUPPLY CHAIN MANAGEMENT



Source: Čiarnienė and Vienažindienė (2014), p.1016.

4. LEAD-TIME MANAGEMENT IN PRACTISE – THE CASE STUDY OF H&M

The fashion company Hennes & Mauritz (H&M), holds one of the leading positions within the global fashion market, owing to its unique concept, business model and the ability to simultaneously place its well-designed products at affordable prices. In order to maintain that position and always have a prepared response to the challenges of the biggest competition (Zara, GAP, UNIQLO), it is forced to constantly review and evaluate its strategic direction and sustainability of its competitive advantages.

The design process is centralized at the headquarters of the company, in Stockholm. The whole process involves teams of 200 designers and about 100 assistants who transform their ideas into sketches. The centralization of the design process and the direct communication between the designers and business offices located in the production facilities enables quick reactions to new market trends and circumstances. The designers perform their job based on: numerous research executed among the customers, organized focus groups and the information collected from the employees in retails and *POS (Point of Sale)* system. Out of the total number of designed products on annual level, between 3000 and 4000 products are selected for production.

H&M does not possess its factories. Instead, the company chose the business model according to which the production activities are externalized to the countries with cheap labor force. Therefore, 70% of the production is in Asia (Bangladesh, Pakistan, China and Turkey) and the rest in Europe and Africa. The production process itself possesses the following features: low wages, low input costs and high production volume.²⁰

The procurement process is coordinated from Stockholm with the constant communication with the business offices next to the production divisions. Cost-effective procurement is achieved by performing all the logistic activities internally, except the transportation activities, which are externalized. The products are delivered directly to big and technologically equipped distribution centers from the production divisions. The biggest and the best equipped distribution center is in Hamburg, Germany. It occupies 114 200 m². The second one is in Poznan (Poland) and it covers 83 300 m². The third one is in the village of Ghlin (Belgium), close to the French border and its surface is 51 000 m². It is interesting that the distribution centers in Hamburg and Poznan are not the property of H&M but sold based on the leaseback principle. If needed, these distribution centers implement certain adjustment of products before the final delivery to retails. The retail stores maintain a very low level of stock, so the addition of the stock from the distribution centers is needed on a weekly basis.²¹

H&M always puts an effort to position its retail stores in the best possible locations, unrelated to whether it is downtown or a shopping mall. The company mostly does not buy the retail premises, so its international expansion is primarily based on renting the premises or concluding the contracts on franchising. Therefore, the funds are not captured and the liquidity and flexibility in decision-making is encouraged.

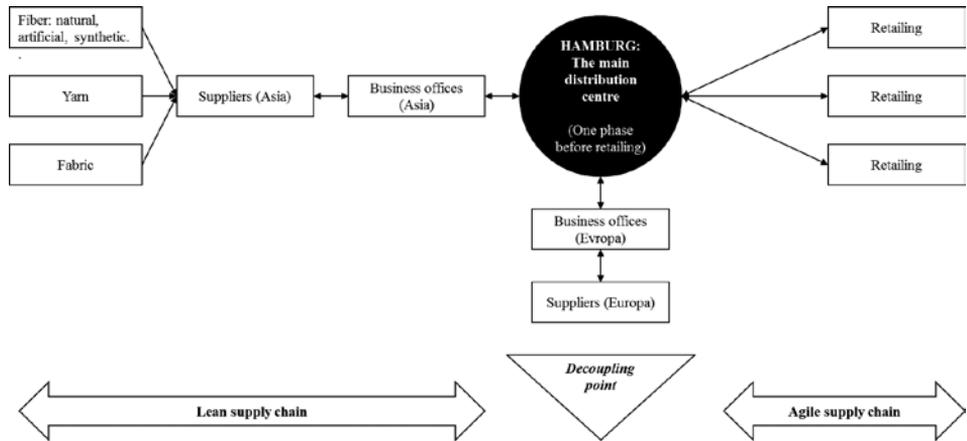
The Picture 6 presents the supply chain of the H&M company, via the distribution center in Hamburg, which is the biggest and the most fashionable distribution center of the company in Europe.²²

20 Annual report – H&M (2017)

21 Regnér and Yildiz (2011), p. 579.

22 Saini (2007), p. 16.

► PICTURE 6: THE H&M'S SUPPLY CHAIN



Source: Saini (2007), p.16

In the previous years, the lead-time in H&M had variations between three weeks and six months depending on the type of products. Therefore, it took from three weeks to six months to design, produce, transport and deliver a product to the retail stores.

5. CONCLUSION

The analysis carried out in this paper was aimed to display the theoretical and practical importance of the adequate application of the lead-time concept in business activities of all the participants in the supply chain. The first part of the paper focused on the explanation of the essence and the characteristics of the lead-time concept, as well as its importance in the supply chain management. Two perspectives of the concept perception were presented, which the management of each company should be familiar with in order to have successful market performance. The second part of the paper was related to the analysis of the lead-time management in the fashion industry, which was chosen as relevant for presenting all the positive effects of the good concept management. Consequently, the relevance of the design and application of agile supply chain, which, driven by the demand, provides a quick response to the customer demands, were considered. The final, third part of the paper provided the analysis of the business model of the H&M company, based on the stated concept, with the intention to show the practical contribution of the reduction of the lead-time for the accomplishment of the competitive advantage in today's dynamic environment.

LITERATURE

Annual report, available at: <https://about.hm.com/content/dam/hmgroup/groupsite/documents/masterlanguage/Annual%20Report/Annual%20Report%202015.pdf>, [Accessed on: 25/04/17]

Barnes, L. and Lea-Greenwood, G. (2006), „Fast fashioning the supply chain: shaping the research agenda“, *Journal of Fashion Marketing and Management*, Vol.10, No.3, pp. 259-271.

Bhardwaj, V. and Fairhurst, A. (2010), „Fast fashion: response to changes in the fashion industry“, *The International Review of Retail, Distribution and Consumer Research*, Vol.20, No.1, pp. 165–173.

Bullwhip strike, available at: <http://www.imd.org/research/challenges/TC042-15-bullwhip-still-strike-seifert-isaksson.cfm>, [Accessed on: 25/04/17]

Chopra, S. and Meindl, P. (2007), *Supply Chain Management: Strategy, Planning and Operation*, Pearson Education, Inc., Upper Saddle River, New Jersey.

Christopher, M. (2000). “The Agile Supply Chain: Competing in Volatile Markets”, *Industrial Marketing Management*, Vol. 29, No.1, pp. 37–44.

Christopher, M. (2005), *Logistics and Supply Chain Management*, Pearson Education Limited, UK.

Christopher, M., Lowson, R., Peck, H. (2004), „Creating agile supply chains in the fashion industry“, *International Journal of Retail & Distribution Management*, Vol.32, No.8, pp. 367–376.

Čiarnienė, R. and Vienažindienė, M. (2014), „Agility and Responsiveness Managing Fashion Supply Chain“, *Procedia – Social and Behavioral Sciences* Vol. 150, pp. 1012 – 1019.

Lean flow metrics, available at: <https://leankit.com/learn/kanban/lean-flow-metrics/>, [Accessed on: 16/04/17]

Mason-Jones, R. and Towill, R. D. (1998), „Time compression in the supply chain: information management is the vital ingredient“, *Logistics Information Management*, Vol.11, No.2, pp. 93-104.

Regnér, P. and Yildiz, E. H. (2011), *H&M in fast fashion: continued success?* Pearson Education, Inc., Upper Saddle River, New Jersey.

Saini, M. (2007), *Analysis of clothing supply chain: Integration and marriage of lean and agile*. Pearson Education, Inc., Upper Saddle River, New Jersey.

Schroder, H. And Zaharia, S. (2008), „Linking multi-channel customer behavior with shopping motives: An empirical investigation of a German retailer“, *Journal of Retailing and Consumer Services*, Vol.15, No.6, pp. 452–468.

Shiemaker, E. M. (2001), „A Framework for Examining IT-Enabled Market Relationships“, *Journal of Personal Selling and Sales Management*, Vol.21, No.2, pp. 177 – 185.

Stalk, G., and Hout, T. (1990), *Competing against Time*. Free Press, New York, NY.

Thomas, P.R. (1990), *Competitiveness through Total Cycle Time*, McGraw-Hill, Maidenhead.
