

**Logistics overview of a production  
company**

**Case: OKNA ROSTA, RUSSIA**

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Abstract <p>This paper introduces a study aimed at developing the operations of the OKNA ROSTA company in order to help the company be prepared for the future challenges and understand its own role and functions in the upcoming year.</p> <p>The theoretical background consists of an overview of the logistics industry and its present situation in the Moscow region, Russia. Moreover, the methods of future research were studied in order to understand the research instruments and methods discussed in this paper.</p> <p>As a result, the author was able to determine and describe the possible scenarios of developing the logistics department of the company, and write them in this paper.</p> <p>The results of this research are confidential. The confidentiality issues concerning this thesis were agreed on with the student, JAMK University of Applied Sciences and OKNA ROSTA.</p>		
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# 1 Introduction

## 1.1 What is happening in the Logistics world

In the market economy, every company is forced to take care of competitiveness. The main task of the company is the following: a stable improvement of the quality of production and maintenance with the normal price level. Despite the many commendable efforts of rationalization to maintain distribution costs at the same level during the last decades, the costs are still growing.

There are several rational reasons for this undesirable trend. The whole distribution system has become more complex. Through internationalization, the distance between producers and consumers increases. Moreover, the production program has expanded, and the products now have a short life cycle.

The distribution costs of goods and the related service requirements are the most actual problems of today. The relevance of the selected topic lies in the fact that the quantity and quality of products and services are the key to competitiveness. This means saving resources and improving production efficiency, ensuring and securing products and services to human and environment.

Strengthening the position in the competitive struggle today depends not only on the quality of production, but also on the quality of supply chain management (SCM), because improving SCM is one of the main factors increasing the level of company sales.

In order to attain and hold a place in the market, companies must be constantly concerned about raising the allowances of their products while reducing their prices. This can only be achieved by introducing modern methods of improving the delivery chains. All this determines the significance of the chosen research topic. In addition,

consumers have become more powerful, because their needs are growing and will change more quickly than before. This requires companies to find products that the consumers want at the right time and in the appropriate quantities. This means that the distribution system must operate more flexibly and more efficiently.

## 1.2 The background

### 1.2.1 Where it all started

According to the Organisation for Economic Co-operation and Development (OECD), the growth of the world economy failed to reach the level predicted for this year. One of the key factors in the slowdown of economic growth in the majority of the developed countries such as the European countries and Russia. For example, the technology and mechanical industry, which raises the warning example of poor cost competitiveness in terms of labor costs and productivity, experienced a significant decline in Finland. (United Nations, *World Economic Situation and Prospects 2014*)

When it comes to the production of the Finnish market, small and medium-sized enterprises (SMEs) play an important role. In order to improve their competitiveness and achieve cost-effectiveness, companies should not only meet their clients' needs and learn from their competitors' actions, but also improve their internal performance. This will improve their operational processes, such as inventory control, purchasing and production, and other internal processes. Moreover, inventory management is closely linked to the capacity utilization and the realization of profits. Therefore, an effective inventory management makes sense for small and medium-sized manufacturing organizations, as well as for economic growth.

The thesis was assigned by the OKNA ROSTA company from Russia and it was asked to specifically focus on the assessment of the company's existing stock, warehousing system and purchasing performance. Based on a comparison between the optimal (theoretical) results and the current ones, an attempt was made to find a suitable solution for solving the existing problems. More specifically, the primary objective was to evaluate the effect of non-active actions and to discover the factors causing them.



In order to achieve cost efficiency, the company itself made some changes in the strategy related to the procurement process. (The Transportation Manager, 2016) In this case, no further comparison was made between the modified strategy, purchasing and the theoretical recommendations, that were given in order to assist the future decision-making process of the purchase team and to ensure the company's long-term competitiveness.

With a scientist's point of view, despite a good combination of theoretical study and practical knowledge in the process of research and analysis, the practicality of some theory was verified as well. For example, an assessment was made whether the JIT principle was applicable to finished products in a non-production environment. In addition, this work reflected on whether the Economic Order Quantity (EOQ) calculating methods are the most effective way to find out the optimal number of orders.

Russia has made rapid progress in reducing poverty and catching up with the income levels of the developed OECD countries over the past decade. However, this progress has been largely supported by the oil price rise, not a structural transformation of the economy. It has also been uneven, because regional and personal inequality remains extremely high. Continuing to improve the standard of living has required, while reducing the dependence on natural resources, modernizing the economy and encouraging more inclusive and sustainable development.

Russia has a great deal of resources that can be relied on when trying to succeed in this challenge. These resources include low debt, high labor force participation and abundant energy resources. A leading position in areas, such as space technology points to the untapped potential in other segments of the economy. To reap the fruits of this potential, reform efforts are necessary. This is important not only for Russia but for the world at large. OECD expects the deepening of its relations with

Russia and working with Russia. This includes the process of joining the OECD and contributing to making the Russian economy modern, lively and inclusive.

### **1.2.2 Company information**

OKNA ROSTA came firstly to the market of translucent constructions in 1996, and today it is one of the leading manufacturing companies in the field of plastic windows and doors in Russia.

OKNA ROSTA is a big, well-oiled machine, which includes its own production facility for the manufacturing of PVC and wood. The company's Head Office is situated in Moscow, Russia and it has subsidiaries in the other cities and regions of Russia. The staff includes more than 1,000 highly skilled professionals.

Every year the company is actively increasing the production rates and expanding the range of products, while improving the quality of the provided goods and services. The experts of the company are aware of all the latest trends and innovations in the market of translucent structures. When manufacturing products the company uses the most modern equipment, new technologies and materials of the highest quality. The Profile VEKA System is an excellent proof of this. This profile system absorbs only the highest level of noise and heat insulation. As in the initial stage of development, and now, the top priority for OKNA ROSTA is the interests of the client.

Today OKNA ROSTA is ready to offer the following range of products and services:

- Manufacturing and installation of high-quality durable windows and doors from PVC profile (VEKA system);
- Manufacturing and installation of window and door systems made of wood and wood-aluminum profile of any complexity;
- Installation of the Central Vacuum Cleaning Systems (built-in vacuum cleaners) such brands as VACUFLO, ENKE, and CYCLOVAC;

- Sales and installation of modern air-conditioning and heating equipment from well-known manufacturers;
- Manufacturing and sale of vinyl siding -facade panels made of durable PVC.

The production plant is located in the Moscow region (Dmitrov), and covers an area of more than 15 000 sq.m.

Production is equipped with the most modern facilities which are comparable with the universally recognized contemporary world leaders in this area - German and Swiss firms, for example, URBAN, Lenhardt, Bystronic, Elumatec, Graule, KWF. A big number of the machines which are located in the production plant are the only ones in Russia.

The warranty periods for products from the Company OKNA ROSTA are the following:

- Plastic windows from the profile systems VEKA - 5 years;
- Wooden windows - 3 years;

All the products have hygienic certificates, fire safety certificates and certificates of compliance with the state standards and building codes.

The top managers and leading specialists of the company are trained in Germany, Austria and Switzerland. They also visit Russian and internationally specialized exhibitions. This allows the company to keep abreast of new window technologies and provide all the best world achievements in the field of translucent structures to the customers.

Company provides the clients with the big variety of services: from design and engineering to manufacturing, transportation, installation and repair and replacement work.

For 19 years, a large branch network created the success. The company representatives are located throughout Moscow and the Moscow region. The offices are equipped with all the necessary samples of products and accessories. Employees are involved in a variety of regular activities. This has been made to improve the skills of the company in its own Training Center.

It is always possible to choose the nearest sales office, and get an expert advice from a specialist both by telephone and by visiting the office.

Most of the customers are customers who come again, or by the recommendation of their friends and acquaintances.

In many cities of the Moscow region, as well as in the other regions and cities of Russia, the official company dealers successfully operate.

The company is always open for a new cooperation. A flexible system of discounts, a wide range of products, technical and information support make the cooperation with the company pleasant and mutually beneficial. (*Oknarosta.ru*)

## 1.3 Research information

### 1.3.1 Research problems. The ERP as a first step

It is always challenging to structure, organize, and manage the resources of a company. Many companies, even in a smaller scale, aim to compete in the international market, which makes it necessary to work as efficiently as possible. Implementation of the ERP system can bring many benefits to small and medium-sized enterprises (SMEs) through the integration of information, processing everything in one platform. Since the companies operate in increasingly competitive business environment, finding solutions for efficiency to gain a competitive advantage is vital to succeed. The implementation of the ERP solutions can bring great success to the competitiveness of the company if it is properly done.

The ERP systems have been developed to improve the flow of information between the processes of the company. MOTIVAL and Thompson (2012: 28) writes, "ERP systems are comprehensive software applications that support critical organizational functions." The ERP systems are designed to integrate the processes of the company and its customers and partners.

The production aims to combine all the information in one source. It brings the competitive advantages to companies through improved management of the supply chain, the general improvement in the efficiency and quick responding ability. Through the ERP system, the information flow becomes wider with the aim to be clear and straightforward. This is because information is now going to other systems and users outside the company, not just stays in the office. (Developer.com, Robinson, 2004)

#### *1.3.1.1 The history of ERP*

The Enterprise Resource Planning systems date from the 1960s. The fundamental force behind the development of the ERP system was the development of the computer software. Since the ERP software works on the computers, increasing and developing the efficiency of the computers became essential for the system. Through the rapid development of the computer software, the term legacy system has become well-known in the business world.

The challenge in implementing the ERP in the companies, which work with the existing systems, is to find a way when the transition to modern technology will go smoothly.

Computer software has been rapidly developing since the 1960s and continues to develop further. As Monk and Wagner (2013: 21) writes, "In 1965, Intel employees ob-

served that the number of transistors that can be incorporated into computer hardware are doubling every 24 months, and this trend is still going on." This every 24 months doubling is known as Moore's Law.

#### *1.3.1.2 The MRP system introduced*

ERP is the forerunner of the material conditions for planning (MRP) system, which has developed its early forms in 1960. History ERP starts from manufacturing enterprises and their need for cost-effectiveness in high volume production. Through the development of early computers and minimizing competition with the first computer production and order planning systems are born. MRP software arose from a simple system to keep track of inventory, which are focused on large productions rearranging points in the 1960s and 1970s.

MRP develops further than just monitoring the stock and allowing the plant managers to look at the forecasts of sales and marketing, and to calculate the costs and time requirements to meet the planned sales plans from the budgets. Basically, the computer era brought an opportunity to electronically manage the supply chain of the companies, their increased efficiency due to the reduction of costs and delaying the purchase of paper and billing systems. (Monk and Wagner 2013: 23; Jacobs and Weston Jr 2007: 358) Compared to 1960, the system inventory management and control systems MRP are focused mainly on the marketing and sales. In 1960s, the MRP was focused on the efficiency of the computerization of the inventory and the management of raw materials. The MRP focused on sales and marketing to generate the schedules for production.

In 1980s, the MRP evolved into the MRP II. The MRP II is focused on the supply chain to help managers to design the process from product planning to distribution. While the MRP was more focused on sales and marketing, the MRP II had a focus on the production and quality control strategies. (MOTIVAL and Thompson 2012: 31)

The manufacturing had the focus on improving the internal business processes through the integration of information to improve their services. (MOTIVAL and Thompson 2012: 31)

The early ERP systems become developed and their position in the business world has become stronger. Now, the system is not only focused on the internal processes; the systems allow to access to the long-range resources of the company and its partners, and integrated supply chain management and other external business modules in one computer system. (MOTIVAL and Thompson 2012: 31; Jacobs and Weston Jr 2007: 362)

With the arrival of the new millennium, caused the last two digits to go from 99 to 00 to solve the problem that is known as the problem i2k. An ERP system has become an attractive solution for the updated technology and the ability to better manage the business processes. (Monk and Wagner 2013: 27)

The German company SAP (Systems, Applications and Products in der DATENVERARBEITUNG Aktiengesellschaft) is a leading supplier of the ERP system through the history of the enterprise resource planning. The largest one competitor is SAP is the Oracle Corporation headquartered outside the United States. (Monk and Wagner 2013: 23)

### **1.3.2 Research questions**

The aim of this project is to identify and analyze a possible development of the procurement department in company OKNA ROSTA, as well as to emphasize the theoretical framework, which could develop the presentation of the supply chain particularly in terms of the level of delivery and logistics costs in the prospective.

To achieve the goal it is necessary to solve the following tasks:

- To explore the theoretical foundations of Procurement and define the problem in this case and factors affecting its formation;

- To make a general description of the company and analyze the logistics processes in the company;
- To settle and develop a proposal on improvements in Procurement in the enterprise and assess the possible results of the implementation of the proposal.

The eventual goal of this paper is to provide management of the company with suggestions and proposals regarding the weak points in the Procurement and, where necessary, to concentrate the efforts in order to achieve the desired effect of the supply chain.

There are the assumptions that were made on the base of the research questions. Typically, in companies, the procurement part is the key element in the logistics processes. Therefore, looking into more details of the procurement, the possible problems that the company meets during the work were defined:

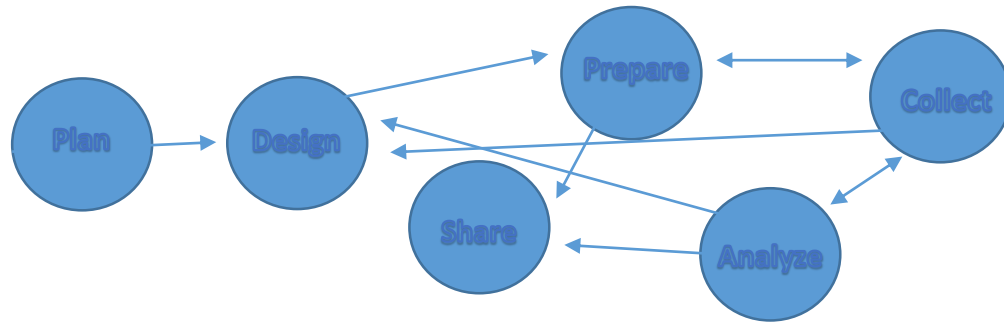
- 1) the items are not delivered on time;
- 2) the items are wrong;
- 3) the items are delivered to the wrong address;
- 4) the quality of the items is poor;
- 5) the price for the items is not reasonable.

### **1.3.3 Case study**

As a research method, the case study is used in many situations, to contribute to our knowledge of individual, group, organizational, social, political, and related phenomena. Not surprisingly, the case study has been a common research method in psychology, sociology, political science, anthropology, social work, business, education, nursing and community planning.



This is the way of doing the case study research:



The case company of this thesis is a PVC windows production company specializing in wooden and plastic windows. It works in Russia with the headquarters in Moscow, Moscow region, and all over the country. Its market is Russian and working with the regional producers of glass and other materials, as well as directly with the factories. It employs more than 1,000 highly skilled professionals.

First of all, the case of the company products featuring not only wooden and plastic windows production, but also aluminum. The reason why it is the case is that the company is considering the possibility of the implementation of the changes in the procurement, and that the company has the inefficiencies in its processes. There is an overlap in the data that is scattered into several smaller systems that do not work together. The processes of the company that are operating inefficiently are procurement, warehousing and production process.

As in the case of the company operating in the windows production industry, it has a unique working environment, so the aim of the thesis is to determine whether the changes in procurement department are suitable for the company. The company has undergone the survey over the study period of this thesis. The case study aims to benefit the company by providing the case analysis of its current business processes and to provide the possible solutions which can be realized.

#### **1.3.4 Research objective and research limitations**

In this specific research field, in order to get precious and accurate information of procurement and supply chain management issues, the questionnaires and data collection are the two measures in use. OKNA ROSTA supply chain manager will receive the e-form questionnaires. The questions are based on the standard supply chain management, and after collection the comprehensive data and using the comparison to find out the problems between OKNA ROSTA supply chain management and how the supply chain works in the Russian company. What steps and methods OKNA ROSTA should take in order to operate successfully? The objective of this research is to study OKNA ROSTA procurement, and get the basic understanding of the Russian retail market, and to give the proper advices to OKNA ROSTA at the end of this research.

In order to limit the study of these, there is a need to establish a clear research focus. Although the company is a leading manufacturer of windows for the wholesale and retail use, with competitive prices in the entire Russia, the coverage of this thesis is Dmitrov, Moscow region.

The logistics part of this work concentrates on the logistics activities from the main warehouse in Dmitrov, Moscow region, in production plant focusing on the manufacturing and storing. Although there are many factors that control the development of procurement, only the mentioned are the ones that the author believes will affect the company's future.

It is important to note that this work will not lead to any outcome, but only a proposal and giving the suggestions to the company's possible ways of treatment for the observed problems and deficiencies in procurement and supply chain management.

The main source of information in this thesis comes from the internet resources, journals, and scientific literature about procurement and purchasing. I also interviewed some of the workers from the manufacturing plant.

In addition, the thoughts expressed in this paper are based on the participant observation and the personal knowledge after the practical trainings.

There are many other interesting aspects of procurement, such as complex logistics networks, storage and quality control and to reduce the risk of being defrauded (Ethics and legal issues). All this deserves much more attention. However, due to time constraints it is not discussed in this paper. This case study focuses on the purchase of materials and partly storing as it is important in the company's procurement.

In the end, the whole process of working on a thesis proposal and writing the thesis were worthy and challenging experience. As a beginner, who is just starting a career in logistics and with some months of practical trainings, I can limit the depth of knowledge to look at the issues further.

### **1.3.5 Topics that will not be studied**

The theoretical framework of the research will be based on the procurement strategy as a basis for defining the customer needs and on the choice of suppliers. However, the understanding of the needs of the customers is the essence to build their supply chain and understand its capabilities. The outcome of the market research is a leading the way in defining the need.

The theoretical framework will focus on the supply chain management, where the outcome of the work is building a cross-disciplinary team of the procurement strategies from existing departments and staff. These are the key job competencies. The strategy should be designed to use all the available resources in the most efficient manner in order to obtain good partnerships with suppliers and customers.

In order to improve the function and quality of supplier's theoretical framework, there are methods for quality management and supplier performance monitoring.

The main sources of information will be the literature, articles related to the strategy for procurement and visions for the company's future strategic processes.

## 2 Literature review

### 2.1 The process

The process is a sequence of interdependent and linked procedures which, at every stage, consume one or more resources (employee time, energy, machines, and money) to convert inputs (data, material, parts, etc.) into outputs. (Waters III, Henry C. (Sandy), 2011)

#### 2.1.1 There are reasons to control the process

According to Nancy J. Sell, the processing plants must produce a quality product. If operating conditions were perfectly stable, this would be relatively simple: the various desired settings could be implemented, and the process could just be allowed to proceed without interruption. Unfortunately, process disturbances prohibit such simple operation. Constant monitoring of the process and regular external intervention (control) are needed to assure proper equipment operation. Process control can thus be defined as the intentional manipulation of input process variables with the objective of minimizing the effect of process disturbances, ensuring process stability, and optimizing process operation. (Sell, Nancy Jean, 1995)

There are three major reasons a process must be controlled. These are, in order of importance:

- 1) Safety
- 2) Environmental Regulations
- 3) Profit

Figure 1 symbolizes what happens when a process deviates from its desired operating conditions. Though the y-axis is, in this figure, the deviation from the setpoint, it could equally be “money”. Moreover, this figure applies on all levels, from the automatic control of a simple process, such as maintaining a given level in a tank, to the running of an entire corporation. The major difference between these two extremes is just the time frame. (Sell, Nancy Jean, 1995)

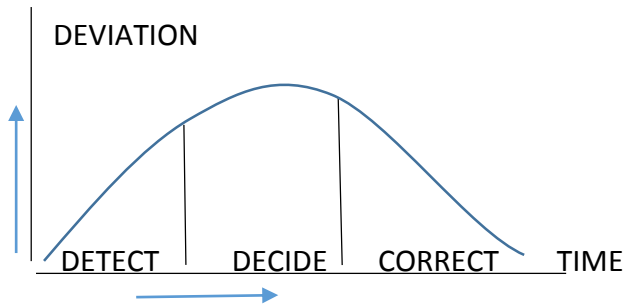


Figure 1. The basic cycle of process control (*Process Control Fundamentals*, 1995).

In the first segment, the process produces off-spec product until the problem is detected. Additional off-spec product is then produced while the control system or the management decides what to do. The third segment represents the product which is lost while the control action occurs. Clearly, it is necessary to minimize both the time frame in which this entire process occurs and the magnitude of the deviation in order to operate profitably. (Sell, Nancy Jean, 1995)

## 2.2 Operations management

Operations management is defined as the design, operation, and improvement of the systems that create and deliver the firm's primary products and services. (Operational management, 2007, 9)

### 2.2.1 The areas of OM decisions

Within the operation function, management decisions can be divided into three broad areas:

1. Strategic (long-term) decisions
2. Tactical (intermediate-term) decisions
3. Operational planning and control (short-term) decisions

The strategic issues are usually broad, addressing such questions as these: How will we make the product? Where do we locate the facility or facilities? How much capacity do we need? When should we add more capacity? Thus, by necessity, the time frame for strategic decisions is typically long – usually several years or more, depending on the specific industry. (Chase, Jacobs, Aquilano, 2007, 9-11)

The operational management refers to the management of the business practices to create the highest possible level of efficiency within the organization. Operational management is engaged with the conversion of materials and labor in goods and services in the most efficient way to maximize the profit of the organization.

The OM teams devise a method of converting inputs (materials, labor, private information, etc.) to outputs (goods, services, product value added, etc.) that can most benefit the organization. Operations management teams attempt to balance costs with revenues to achieve the highest net operating profit as possible.

Operational management is engaged with the design and management of the products, processes, services and supply chains. It considers the acquiring, development and use of resources that companies need to deliver the goods and services their customers want.

The OM scope moves the strategic importance to the tactical and operational level. The representation of the strategic issues includes determining the size and location of production facilities, deciding the structure of services or telecommunications networks, supply chains and design technology.

Tactical issues include the schedule of plants and structure, project management, design and equipment selection and replacement. Operational issues include the production planning and control, inventory management, quality control and inspection, transport and processing of materials, and equipment maintenance policy.

The operational management is mainly concerned about planning, organizing and monitoring in the context of production, manufacturing or services. It is delivery focused, ensuring that the organization is successfully transforming inputs into outputs in an efficient manner. The inputs are representing everything from the material, equipment and technology to the human resources, such as personnel or workers.

The examples of the types of duties or specialized positions are: the procurement (obtaining goods or services from the external sources), managing the relationships with those who are involved in the process, and improve the sustainability of a company in terms of its use of resources.

There are two major conditions that can help to answer the question of what precisely is the operations management: the supply chain management and logistics. The OM has a solid foundation in both areas. For example, an understanding the



global trends in supply chain management in order to meet the demand of clients is often critical. Logistics, careful and considering the use of resources, and economy, it has become increasingly important in an era where resources can often be in short supply, and the customers' expectations have soared.

## 2.3 Supply Chain Management

Fifty years ago, it was clear that if the company produces an item, it would be purchased and consumed on-site. However, the times have changed. The information technology develops rapidly, markets globalize, political economy stabilizes, open borders and the world suddenly became smaller. Consequently, a number of the international companies appeared and started to compete on a global level. Products are changing rapidly, following the trends in technology. Moreover, the consumer habits are changing fast as well. This caused the company to be very careful in planning. In this situation, it is very important to remain innovative, lean and react to the market changes. (Biz-Development, 2011)

Production and logistics processes are going through the big changes. The evolution of the concept occurs from the end of the 60th. During this period there has been a transition from a non-saturated "market producer" to the "consumer market". After the initial market saturation there was the requirement for the quality of goods, and the concept of the general quality of the goods has changed.

"Modern production and logistics are developing in line with the three main trends: client focusing, specialization on core competencies and increasing the value of information technology. The basic principle of the business in the modern market of high growth is the ability to cooperate in order to be competitive." (Gattorna 1996 1 -23)

Here are some definitions of supply chain management:

Christopher (1998, 5) defines SCM as:

"Management of the upstream and downstream relationships with the suppliers and customers to deliver superior value to customers at a lower cost in the supply chain as a whole"

The current definition focuses on achieving the best possible results for all the members of the chain. In the opinion of Christopher about the supply chain management term "supply" should be replaced with "request" chain management which brings satisfaction to all the parties of this agreement, not only for the supply side.

Another definition given by Cooper, Lambert and Pagh (1998, 1):

"Supply Chain Management is the integration of key processes from end user through the original suppliers that provides products, services and information that add the value to the customers".

The definition aims to extend the understanding of the concept of SCM. Conditional processes become the supply chain business processes and are connected via the inter-company boundaries. "The table illustrates the simpler structure of the network of the supply chain, information and product flows, and the key business processes of the supply chain penetration silos within the company across the supply chain." (Cooper, Lambert and Pagh 1998 2)

Another description of SCM Nev & Paine 1995: "The chain that connects the elements of the manufacturing process and supply of raw materials with the user, which includes several organizational boundaries." (New & Payne, 1995) According to this definition, SCM covers the entire value chain and addresses the management of materials and supplies from the extraction of raw materials to the end of its working life.

Tan 2001 review of SCM as the means of conducting business activities and relationship internally within the company, with direct suppliers, with the first and second level suppliers and customers along the supply chain and throughout the supply chain.

On the border of the XX-XXI centuries the logistics underwent the substantial changes, both in the sphere of implementation of logistics technology, and Goal Setting sphere. The new logistic quality demanded the high competition in the world market as an entry product with a lot of short life cycles on the market, and also the ever-growing expectations of consumers on the quality of products and logistics services.

In the last 20-30 years, due to the introduction of the modern technology production, the cost of production has been reduced in the current stage of the scientific and technological progress. (Advisors logistics portal, 2011)

Deepening the specialization as an essential factor in this phenomenon includes the adequate development of cooperation and integration in case of management. However, the sphere of transport cannot provide the desired level similar to the manufacturing sector after the entry of logistics as a multifunctional management that was responsible for managing the flow of materials, information and adequate finances. The logistics concept, such as Lean production and the principle of just-in-time in the 1990s developed the concept of the supply chain management. (Advisors logistics portal, 2011)

Although the SCM concept grew out of the logistics concept, it is different from the SCM logistics. The definitions of "logistics" and "SCM" clarify this distinction: logistics is typically based on the individual business with the aim of making the logistics system of the company more efficient through the internal and external planning and control. The SCM is based on the external relations between the members of the entire supply chain and focuses on how to improve trade in the continent. Thus, this concept gives a broader perspective through the supply chain, which was the traditional approach in logistics. (Jespersen & Skjøtt-Larson, 2006, 14)

SCM studies the whole scheme of the institute of the material information and financial flows. Chah believable that the Supply Management considers the full organization of the processes that controls the material, information and financial flows by looking at each process as a complete architecture.

Supply Chain Management is a set of links that are related to each other with the information flows. The supply chain starts with the purchase of raw materials from suppliers and ends with the sale of finished products and services to the client. Some units can fully belong to an organization. Thus, the supply chain usually consists of several organizations.

Supply chain management system designed to automate and control all the phases of the supply companies and to control the movement of goods in the company. SCM meets the demand of the products of the company and significantly reduce the cost of logistics and procurement. SCM includes the entire cycle of raw material supply, production and distribution of goods.

### **2.3.1 Areas of focus of supply chain management**

Researchers tend to identify six major areas that focus on supply chain management:

1. Production - the company decides what and how to produce;
2. Delivery - when making a decision to construct or enter the supply chain, companies must identify what to produce, and which components (parts, products or services) to buy as a third party;
3. Location - the decision on the location of the production facilities, storage centers and sources of supply;
4. Actions - the main goal of inventory management – to increase in demand or delay in delivery;
5. Transport - decisions related to transport. They depend on the location, inventory policy and the required level of the customer service. It is important to de-

termine exact methods and efficient management of transport, as these operations are about 30% of the total bid price, and this is the delay in delivery due to average more than 70% error in the distribution of goods;

6. Information - the effective functioning of the supply chain is not possible without the rapid exchange of information between all those involved. (Ganeshan and Harrison, 1995)

The organization should create a common meter for the maximum efficiency percentage of all members of the supply chain to effectively perform the SCM system. These meters should be based on the technologies used, market potential, delivery time, and the cost effectiveness that directly associated with the end result.

### **2.3.2 The SCM's objectives**

The objectives of the SCM are the following:

- Raising the level of services;
- Optimizing of the production cycle;
- Decreasing the inventories;
- Increasing the productivity of the enterprise;
- Increasing the profitability;
- Controlling the production process.

The SCM optimal solutions plan for the existing production lines in use, illustrating in detail what, when and in what order should be made of the capacity constraints of raw materials and the lot size. This helps to meet the demand at a minimum cost.

Together with the development of the appropriate software, an enterprise management system began to go beyond the traditional automation company. There are

new conditions: normal control loop (sales, production, and procurement) that is called back-office (internal system), while the interaction with partners and customers is called the front-office (external system).

In today's competitive businesses with all the efforts to meet the customer needs, it is hard to succeed without the formation of an external chain any more. The result is an integrated supply chain. Its connections are all objects, materials and information flows, and the relations between the company, its suppliers, distributors and customers, all the way to the end user. In every link of the chain the losses of time, resources and money are inevitable.

The SCM optimization of the procurement modules assists in the implementation of the strategy to find Suppliers on the basis of cost analysis.

The supply chain functions inside and outside the companies, which enable the value chain, provide products and services to the customer.

The supply chain indicates the link between suppliers, factory, store, distribution centers and sales. The aim is to make the transformation and delivery of the product longer enough between the companies and clients. (Chopra & Meindl, 2007)

The SCM is known as supply chain management and it was firstly introduced to the world in the early 1980s. Oliver and Webber had a discussion about the potential benefits of the integrating business functions. Purchasing, production, sales and distribution, etc., these functions can be integrated into a single business model. In the current business market, supply chain management is used in different ways. In a typical supply chain, the raw materials are produced in different factories, and then are transported to a warehouse for storage, and then the final products are delivered to retailers or consumers.

Traditionally, the company does not suppose that their suppliers or customers will be their potential partners. Each of the runs exists just because of the fierce competition over the material suppliers and customers. At the beginning of the 1960s and 1970s, several companies began to change their attitude and to connect internal functions, such as material flow, procurement and transport. (Class, and Goran Hakansson, 2010)

## 2.4 Procurement

Procurement is concerned with purchasing and arranging inbound movement of materials, parts, and/or finished inventory from suppliers to manufacturing or assembly plants, warehouses, or retail stores. Depending on the situation, the acquisition process is commonly identified by different names. In manufacturing, the process of acquisition is typically called purchasing. In government circles, acquisition has traditionally been referred to as procurement. (Logistical Management, 1996)

The procurement obtains its importance for organizations from two sources: cost efficiency and operational efficiency. Managers with good negotiating skills and strong relationships with suppliers can save large sums of money for the organizations compared to the competition. Identifying the right production equipment and buying it at a good price can create a cost competitive advantage that lasts in a longer term. Good procurement practices help to avoid the operational problems. Current trends suggest that the leadership requires more than purchases and then the cost of goods. The supply is being expected to provide supplies to make profits, not only to reduce costs.

Without an effective procurement practices, customer service level can fall, a long-term customer relationships may be damaged. Before a product can be produced, the accessories should be available and the availability must meet certain requirements. The fulfillment of these conditions can be considered as an objective procurement. (Blumberg, Lema, Hana, 2002; 13)

### 2.4.1 The procurement goals

The effective acquisition of goods and services requires the right materials in the right quantity, in excellent condition, at the right time, from the right source, with appropriate service, and at the right price. More explicitly, supply is expected to achieve the following nine goals:

- Provide a steady stream of supplies, materials and services;
- Minimize the investments and inventory loss;
- Maintain the appropriate quality standards;
- Find or develop competent suppliers;
- Standardize, wherever and whenever possible, the purchasing;
- Purchase necessary items and services at the lowest final price;
- Improve competitive position of the organization;
- Work harmoniously with other departments in the organization;
- Accomplish objectives at the lowest possible level of administrative costs.

These objectives correspond to the overall objectives of SCM and tend to provide the desired level of service to clients while minimizing the total cost. To meet these objectives, procurement usually follows a recognizable process. (Blumberg, 2002 13–15)

While individual purchases may look completely different, there is a general and basic procurement process; the process can be divided into five procedures: identification of needs, identification of suppliers, qualification and setup tasks, monitoring and management the process of delivery, and evaluation of procurement and suppliers:

- Recognizing the need;
- Identifying the supplier;
- Setting the tasks;



- Monitoring the delivery and process management;
- Evaluating the procurement and suppliers.

Similarly, purchases can go good or deprive. Most of the organizations' procurement summarizes the accumulated experience with suppliers through many transactions and purchases. Once the transaction goes awry, procurement can contact suppliers to avoid the problems in the future. When many transactions do not meet the standards, then the acquisition of seeking new suppliers occurs. (Blumberg, 2002, 15)

#### **2.4.2 Categorizing the goods**

Although the managers buy various materials, most purchases are included into these eight categories:

- Component parts (production purchases);
- Raw materials (production purchases);
- Process materials (non-production purchases);
- Accessories equipment (parts and services bought);
- Major equipment (non-production purchases);
- Operating accessories (non-production purchases);
- Finished product (corporate origin of purchases);
- Services (non-production purchases).

These eight categories of purchases fall into four specific purchasing situations. Companies cannot refer to these four situations. Their exact names are listed below, but the definition should be the same.

- Routine orders, including situations where the product is bought many times;
- Procedural problems. It contains no routine purchases which may require employees to learn how to use the product;

- Problems of performance. It does not contain a routine of buying products that are designed to be a substitute for existing products, but the ones that must be tested for performance;
- Political problems. Includes non-routine purchased products whose use will affect many departments of the company; many people in the company are involved in the decision.

Today, the procurement managers rely on their computer to help in these situations of buying. The computer does not change the steps in the analysis of the purchase decision-making; it just speeds up the process.

While buying the large quantities of materials or objects it is necessary to determine which of them will have the greatest impact on the cost of inventory and categories that require special management and control, as well as the efficient use of inventory resources that can affect the total cost. (Vollmann 1997 720– 722)

To resolve this problem, it can be used with ABC analysis (Selective Inventory Control).

### **2.4.3 ABC-analysis**

In analyzing the ABC, the list is divided into three categories: "A" - important and about 10% of the cases, or 66, 6% of the value of "B" - Medium nearly 20% of the items, or 23.3% of the value of the "C" - marginal generally 70% of the subjects, or 10.1% of the value.

The alternative percentage level exists for ABC Selection Group. Typically, the ABC analysis groups prioritize the inventory control on the A and B, and can be characterized by:

A- Close-control, often checks the schedule of the audit, little or no safety stock, and the high aims of the market (12-24 times / year);

B- Medium control, check the changes in demand, moderate safety stock, and high turnover goals (6-15 times / year);

C-Looser control, visual check or two -bin system, a large safety stock, and the low turnover (1-5 times / year).

#### **2.4.4 Stock keeping and the EOQ**

Companies often face the challenge to determine optimal order quantities, optimal production quantities, safety stock levels, and other inventory policies that significantly affect supply chain costs and profitability. (Talluri, Srinivas, Kemal Cetin, and A.J. Gardner, 2004)

One of the most ancient question is ‘how much to buy?’

To answer this question, many attempts have been made to create a practical formula that in addition to the basic reasons will also take into account many other factors. Some of them are: the unit costs in various sizes lot, the average inventory purchases result in different amounts, number of orders, negotiation and issuing orders for the procurement costs, and transportation costs related to inventory. One widely accepted effective solution is economically Order Quantity (EOQ) that describes the balance point between the acquisition (purchase order) costs and the expenses.

Holding costs increase with the amount of the purchased objects.

Economic Order Quantity (EOQ) has been a known concept in the manufacturing industry for 100 years. Over the years numerous methods for calculating economic order quantities have been developed and these methods have become increasingly advanced as their creators have aimed to solve more intricate problems.

The formula is the following:

$$EOQ = \sqrt{\frac{2SD}{PI}}$$

where :

S = Setup costs

D = Demand rate

P = Production cost

I = Interest rate (considered an opportunity cost, so the risk-free rate can be used)

(Holmbom, Martin and Anders Segerstedt, 2014)

The point of EOQ balance represents the place where the net amount of the cost of keeping and purchase order meet (Waters 2003 260; Hugos, 2006, 60):

When using the EOQ, one should also be aware of their shortcomings and limitations. Safety stocks are usually required to practice as a supply of the services and may be delayed or may inevitably be unexpected with the demand for the shares. EOQ also assumes that the demand is constant and clearly known; it is often not true as it can vary with the different factors to a certain level of uncertainty. Moreover, the assumption of unlimited space and the amount of supplies and discounts, along with possible changes in the cost structure (e.g. reduced by e-commerce) are also overlooked. As a result, the computer errors can occur, and may materialize as a little wrong number of orders to be placed especially when it comes to fractions or decimals. (Waters 2003 260; Hugos, 2006, 60)

		Lead-Time	
		Constant	Variable
Demand	Constant	No Safety Stock	$R_L = RL$ $\sigma_L = \sqrt{R^2 s_L^2}$ $SS = F_s^{-1}(CSL)\sigma_L$
	Variable	$R_L = RL$ $\sigma_L = \sqrt{\sigma_R^2 L}$ $SS = F_s^{-1}(CSL)\sigma_L$	$R_L = RL$ $\sigma_L = \sqrt{\sigma_R^2 L + R^2 s_L^2}$ $SS = F_s^{-1}(CSL)\sigma_L$

where:

R = Average demand per period

$\sigma_R$  = Standard deviation of demand per period

L = Average lead-time for replenishment

$s_L$  = Standard deviation of lead-time

SS = Safety stock

$F_s^{-1}$  = inverse normal

CSL = Cycle service level

The following are a set of recommendations for effectively managing the safety stocks at the company:

- Emphasize on the accuracy of the forecasting models, which results in improving the demand estimation that allows for setting safety stocks more accurately.
- Improve the estimation of the lead-time and its variability, as the variability in lead-time and demand have a significant impact on the safety stock levels.
- Inventory aggregation can be utilized as a strategic approach for decreasing safety stocks without sacrificing the customer service levels. This can be performed by centrally holding the slow moving items and decentralizing fast moving items. Studies have shown enormous improvements in safety stock levels when using aggregation policies effectively.

If the organization is expected to be profitable, it should be acting in the accordance with some plan. This is the case with the purchasing. Of course, in accordance with the business size and the resources available to choose a plan, there might be different levels of complexity and coverage. Focusing on the objectives, each procurement plan begins, however, from the basic operations such as collecting and organizing the relevant information in a logical sequence for inspection and reference. The main presentation of the plan for the purchase of goods should be pretty easy to contain, at least the following information:

- Description and Specification;
- Past forecast future demand;
- Market size;
- Major manufacturers and suppliers;
- Distribution of the current suppliers (percentage numeral & parts);
- Supplier advantages (price, quality, service);
- Supplier weakness;
- Contract type, length, method;

- Short- term (one year) and long term (five years) plans;
- Quality improvements and cost reductions resulting from the plan.

In one of the prediction of what is above the assessment of the most likely course of events or series of probability, there are very organized activities to determine what needs to be done in response. (Boversok, Closs, and Cooper 2002, 143)

### 3 Research methods

*“Not everything that can be counted counts, and not everything that counts can be counted” – Albert Einstein (Patton, 2002, 12)*

Thinking about design alternatives and methods choices leads directly to consideration of the relative strengths and weaknesses of qualitative and quantitative data. The approach here is pragmatic. Some questions lend themselves to numerical answers; some do not. If you want to know how much people weigh, use a scale. If you want to know if they are obese, measure body fat in relation to height and weight and compare the results to population norms.

If you want to know what their weight means to them, how it affects them, how they think about it, and what they do about it, you need to ask them questions, find out about their experiences, and hear their stories.

Comprehensive and multifaceted understanding of weight in people’s lives requires both their numbers and their stories. Doctors who look only at test results and do not also listen to their patients are making judgments with inadequate knowledge, and vice versa. (Patton, 2002, 13)

Qualitative methods facilitate study of issues in depth and detail. Approaching fieldwork without being constrained by predetermined categories of analysis contributes to the depth, openness, and detail of qualitative inquiry.

Quantitative methods, on the other hand, require the use of standardized measures so that the varying perspectives and experiences of people can be fit into a limited number of predetermined response categories to which numbers are assigned. (Patton, 2002, 14)

### **3.1.1 Quantitative research**

Quantitative research is used for the quantitative problem by generating numerical data or data that can be transformed into the useful statistics. It is used for quantitative views, opinions, behavior and other defined variables - and to generalize results from a larger sample population. Quantitative research uses the data for the formulation of measurable facts and discovers the patterns in the study. Quantitative methods of data collection are much more structured than qualitative methods of data collection. Quantitative methods of data collection are different for different types of the surveys - online surveys, paper surveys, studies and research of mobile kiosk, face-to-face interviews, telephone interviews, longitudinal studies, site interceptors, online voting, and systematic observations.

### **3.1.2 Qualitative research**

Qualitative research is primarily a research study. It is used to gain an understanding of the underlying reasons, opinions and motivations. It gives an insight into the problem or helps to develop the ideas and hypotheses for the quantitative research potential. Qualitative research is also used to detect the trends in thought and opinion, as well as to dive deeper into the problem. Qualitative data collection methods vary using unstructured or semi-structured techniques. Some common methods include focus groups (group discussion), individual interviews, and participation / observation. The sample is usually small, and respondents were selected to fulfill a given quota.

So, in this research paper the questionnaires and interviews are used as the research methods.

## **3.2 Scenarios**

The selected methods of quantitative research are the primary methods of the data collection for this research. The method is proved to be very cost effective and can reach a good outcome.



According to Christina Hughes (2006), the quantitative study consists of those studies where the data will be analyzed in terms of numbers. Research can be a questionnaire or an interview, but in both cases a structured questionnaire is done where it is easy to analyze the results, although there is a huge amount of data collected. The study as a research strategy aims to tell you why, how, where and when the customer will buy the products. Hughes (2006) also argues that the research has the precision and control of the results of the sampling and design. On the contrary, in the complexity of the human experience it is difficult to exclude all the variables. However, the research is an economical way to gather the information when a sample of the population is large.

Ali Aga & Gunderson (2002) describes a quantitative research in the following way:

The quantitative research is "explaining the phenomenon of collecting numerical data analyzed using the mathematical methods (especially statistics)."

When explaining the phenomenon, the main goal for every research is to find out why something is happening and that there are reasons for the phenomenon. The quantitative research is also a way to find out the opinions, values and attitudes. A key part in raising reasonable and understandable information is to analyze carefully prepared questions. To be able to use the mathematical methods of data, there should be a numerical form. The questions are usually expressed in an oral form, but the answers are gathered in the numerical form. The study of the occurrence of certain statistics must be measured by different indicators. (K Vehkalahti, 2008)

The questions can be described as all open questions, closed ones, and the machine-generated questions. The open questions are left open for the respondent to describe the response to his / her own words. The questions that are closed they have the predefined responses from which the most suitable can be chosen. It is also common to use a combination of the previous multiple choice questions and a field where the respondent can express the answer in his / her words.

Vehkalahti (2008) states that the advantage of the Web surveys is that they are not geometrically linked and can collect a lot of data in a short period of time. The huge amounts of data are quite easy to analyze with modern software and to get a fairly accurate view of the joint opinion of the problem.

Finch (2013) established that there are four basic types of the research that can be done by mail, phone, online or in person. The most common factors that determine the manner or method to use are the communication availability, length and depth of the research, pattern, timing and budget. Finch (2013) states that there are two types of errors that can affect the results, they cannot be sampling errors. Non-sampling error can be a result of a bad constructed questionnaire, the low response rates, incomplete coverage of markets and weaknesses in processing. Sampling error is the process when you decide which part of its market should be tested and when and how it should be targeting a pattern.

The reliability research depends on various factors. Finch (2013) describes the most general polls today that have a rate of return of 2-10% and the known factors that affect the rate of return:

- *Length research. He would never study too long; people tend to get bored quickly and can leave survey canceled;*
- *Auto notification / decent introduction. When the respondent warns, or imported into decent survey and goals, return rates go up;*
- *Money, hand car, a lottery. The rewards defendant or even a chance to win a prize stimulates research on interesting;*
- *Monitoring and reminder. Most respondents forget to respond to the survey for the usual reasons, and contact them to activate;*
- *Time limit. When the respondent does not know when it is necessary to answer, they leave it, unless he/she is not interested.*

### 3.3 The questions for the interview with the Head of Logistics

- 1) What is the structure of the company in short?
- 2) What is the structure of the Logistics Department?
- 3) Are there SKU's?

Where, the SKU is: a stock keeping unit, a store's or catalog's product and service identification code, often portrayed as a machine-readable bar code that helps the item to be tracked for inventory. A stock keeping unit (SKU) does not need to be assigned to physical products in inventory. Often, SKUs are applied to intangible, but billable products, such as units of repair time or warranties. For this reason, a SKU can be thought of as a code assigned to a supplier's billable entities. (*Investopedia*)

- 4) Do you have production of your own?
- 5) Does the Procurement work efficiently?



2) What is the structure of the Logistics Department?

The Logistics Department is pretty simple, it consists of two parts: the Warehouse, and the Purchase Department.

3) Are there SKU's?

Yes, and it includes several warehouses inside Central Warehouse, Accessory Warehouse, Additional Warehousing, Production Warehouse, Finished Goods Warehouse, Slope Warehouse.

Central Warehouse: is focused on consumables, provides the materials for windows.

Accessory Warehouse: applications for windows, is used by installers.

Additional Warehousing: this warehouse is artificial.

Production Warehouse: the material for production.

Finished Goods Warehouse: only ready-made products, has the address storage system.

Slope Warehouse: panels, foam, plastering.

4) Do you have production of your own?

Company OKNA ROSTA is a big, well-oiled machine, which includes its own production facility for the manufacturing of PVC and wood.

5) Does the Procurement work efficiently?

The optimization of placing-picking process is definitely needed as the time spent on finding the right place to store the product (raw material or ready-made product or part, etc.) is long and slows down the working process.

## 4 Research results

### 4.1 Portfolio

In the 21<sup>st</sup> century, the advanced technology has made our lives faster and 'easier'. The global market is electronically connected. Companies that want to increase their market share must improve their level of agility with the aim of being flexible and convenient. For example, OKNA ROSTA is the largest cross-country or non-discount retailer. Their aim is to develop their future market in the west and central part of Russia. To achieve this move, they have to figure out a way to adapt to the local business environment and how to communicate with the local suppliers. All these achievements require continuous and complete supply chain, which means that it must consider whether they can leave the current methodology for supply chain management, or they have to change to adapt to Russian Retail environment.

Most companies choose the movements consolation among the Russian market. Mergers between the super-and hypermarkets between Moscow and St. Petersburg on the basis of the operation want to go across the border. Piaterochka and Paterson have also extended its reach in the Ukraine and Kazakhstan. Foreign trader appears in the Russian market starting in 1980. In 2000, IKEA started its first application. After that, two more international heavyweights, German Metro Group and a pioneer of the French hypermarket Ashan take its entry into the Russian market in 2002.

Apparently no foreign pharmaceutical chain has entered the Russian market. Most other foreign operators, such as French cosmetics chain Yves Rocher, they start their first job in Russia since 1990, and still prefer to enter through a local branch or franchise networks. Another example of this sense is IKEA. All these cases show that the company aims at consumers who identify and meet the requirements that can be achieved in the Russian market.

The Russian market and the customers have changed after the crisis. High unemployment and low incomes have led the consumers to believe in the reduction of the purchase. Since there is a high rate of employment in Russia, it blows the consumer spending; users cannot spend money on unnecessary goods. In this case, it is considered as an opportunity for the foreign retailers to enter the Russian market to offer a better price and brand new products.

International retailers continue their expansion in Russia. Carrefour hypermarket was opened in Moscow Fillion in June. They planned to open two more stores in Krasnodar and Lipetsk. Their goal was to establish a local production of its private label goods to the end of the year 2009. Ashan planned nine hypermarkets in Moscow and other nearby regions in the period 2009-2010. Castorama had a plan to launch seven hypermarkets in Moscow and in the region as well. Wal-Mart continues to express its interest in the Russian market. It is very likely that they will entry through the purchasing local brand. Second hand dealers like the British Debenhams will make its second input of the franchise in the center of Russia and the Summit multi-functional center (the former Minsk Hotel, currently under reconstruction). IKEA has reduced its expansion plans because of bureaucratic problems with the local authorities in Omsk and Samara. (Sanders, 2008)

The local Russian traders behave in the different ways due to the market challenges of international retailers. X5 Retail Group will increase its number of discount. Piaterochka, on the other hand, V & B retailer closed their operations in several regions because of low sales and high rent. Facing international traders and the crisis, they chose pause in expansion.

In the current circumstances, this is an excellent opportunity to rent a store in the mall or on the street open for small and medium-sized retailers, who typically pay the highest fees for entry and rents. The plot is accessible and cannot afford to pre-crisis. (Kubacka, 2011)

## 4.2 The solution on purchasing logistics

Every company has the issues in its processes, such as procurement or storing the goods. So, let us have a look at the general suggestions for improving the company's processes.

The procurement process can be divided in stages. The process starts from creating a procurement strategy and guidelines. If these are done comprehensively it makes the process easier. Then it will be more automatic as the same principles apply to all procurements.

The regulation is updated at times to enhance the procedures and notice the changes in the markets.

The organisation of the supply depends on the type and size of organization. In a small organization, the purchasing is to meet one employee. In a medium-sized organization that can create a department, where employees work, the implementation of procurement, freight forwarders, warehouse workers and other employees are applicable. In a large organization, there can be engaged in the supply of hundreds of people, coordinating the huge purchases of materials.

The main issues in the organization of the procurement are:

- 1) How to arrange the purchase?
- 2) What questions will be authorized to settle the division of power?
- 3) What will be the status of supply departments, which will carry out the procurement director?
- 4) What is the organizational structure and division of responsibilities within the department to supply?



There are the advantages of the centralized procurement:

- The elimination of duplication;
- Unification of all purchases of the same or similar materials, which allows you to get a discount;
- Coordinating related activities in order to reduce the costs of transportation, storage and maintenance;
- About having a single point of contact with suppliers;
- Reducing the cost of transport, storage and maintenance;
- A concentration of responsibility for the supply.

The choice of suppliers and concluding an agreement on procurement, and the organization must follow a specific procedure, which depends on the type of the products purchased.

The first three steps leading to the selection of materials and suppliers, and then, in step 4, there is a peak in relation to the setting of purchase. Here, the organization agrees to buy the specific materials from suppliers, then the purchase order runs the entire the supply chain (with the necessary production planning, agreements with transport companies, financing, etc.). Purchase Order is part of a legal agreement between the organization and its suppliers. The rest of the steps lead up to clarify the details of delivery.

All these actions lead to certain costs, sometimes very high, bringing to a search for ways to reduce them.

There is another problem - a lot of time is needed to implement them. Sometimes the delivery of materials from suppliers may only last one day, although the organization itself requires the delivery of up to five weeks.

### 4.2.1 The e-procurement

Most organizations today operate in one form or another, but they use the e-procurement. According to the results of a number of reviews, it was concluded, that since the beginning of the 2000s, over 50% of European companies use this option offer.

The main advantages offered by the electronic procurement, include:

- Immediate access to suppliers located anywhere in the world;
- Transparent market in which products are readily available, as well as the conditions for their preparation are eligible;
- Automation of procurement, using standard procedures;
- Significantly reduced time required for the transaction;
- Reduce costs (typically 12 to 15%);
- Integration of own information system with similar systems suppliers.

The e-procurement in the first place gives a much better communication, but needs to improve the physical flow of materials. The main impact of the e-procurement affects not only the increase of the speed of procurement, but also its impact on the supply chain. Now, users can buy from many suppliers who are geographically distant from each other. In addition, they can buy directly from the manufacturer or provider of an entry-level, and can take advantage of the various specialized Web retailers.

Organizations vary by the degree of maturity of their procedures for the SCM like the type of purchased materials. Generally speaking, the higher the cost of materials and the more complex demands are, the more time and effort are necessary to ensure that employees are in the sector.

Types of materials that require different approaches to the procurement are:

- Materials that create a slight risk in the supply, use simple procurement procedures;

- Materials, the lack of which can cause difficulties in the work, and the presence ensures a low income, and creates a greater risk of supply, demand the establishment of long-term contacts with alternative sources in order to avoid potential problems;
- Strategic materials that provide high yields, should enter into a formal relationship with suppliers for a longer period, may create alliances and partnerships.

The choice of methods for procurement is very important, because it determines the inventory levels and capital costs directly to the purchase of the MP, for an order for stock storage, storage space, etc. The choice of the method depends on the procurement policy, the complexity and importance of the final product company.

#### **4.2.2 The main procurement methods**

- Purchase of goods by one party will deliver the goods to a lot of benefit at the same time (bulk purchases). In this way, the products can be purchased, the need for which arises unexpectedly, and that do not require long-term storage.

Advantages: ease of paperwork, guarantee of the delivery of the whole Party, increased trade discounts.

Against: great need for storage, slow capital turnover.

- Regular purchases in smaller plots. The customer orders the required number of cases that have come to his parties within a specified period in accordance with the dynamics of demand for them.

Advantages: accelerated capital turnover, since the goods are paid on receipt of individual parties; to achieve space-saving storage space; reduced costs for the delivery of documentation, as once a warrant has been issued for the entire delivery.

Against: Partly ordered excessive amounts of goods; the need to pay the total amount of the goods specified in the order.

- Living the statements (monthly) of the procurement of the benefits which bought cheap and fast consumable products. Quoted statements have been prepared on a daily basis (monthly) and contains the following information: full list of products; the number of products in stock, the required number of subjects.

Advantages: the acceleration of capital turnover, the cost of storage, the delivery on time.

- Supply is similar to a regular supply of needed goods, but are characterized by the following features:

- The quantity of the goods delivered has not been established;
- The dealers make a check before executing any order that is associated with the client;
- Paid only the supplied quantity of goods, i.e., after the expiry of the contract the buyer is not obliged to accept and pay for the goods yet to be delivered.

Advantages: the lack of firm commitments to purchase certain goods, the face of the turnover of capital, a minimum of work on the project documentation.

- Forward purchases may be formed in two forms:

- Organization of command above the material than you would at this point and holding excess inventory;
- Contracts for the delivery of MR at a certain time in the future.

### **4.3 The PVC-window production case**

PVC-window production and storing: warehouse companies and manufacturing plants; in the case of production and storing of PVC window profile, it has a high performance and efficiency, great importance is the competent organization and planning of warehouse and production space.

Quick unloading and storage components, and the supply of semi-finished products in the required amount in the processing, accurate and ergonomic storage of finished products (plastic windows and doors with double glazed) - all mandatory property backing which is right to organize the storing of PVC windows company.

To provide the convenient access to the pallets stored profiles and storage of finished products – it is needed to optimally have plenty of storage. In the process of production and storing and the actual production line of plastic windows and doors - work in optimum capacity, it is also important to have enough power. However, if the limit is reached space, there are several techniques that can be used to assess the difficulties.

### **4.4 Complementary part. Possible options for storing**

#### **4.4.1 Capacious shelves**

Rack - has long been not new, and is widely used in today's economy and a wide range of industries and warehouses. Nevertheless, the market today there are many more benefits of this type of device types, including high storage shelves, metal shelves and skirting increase capacity, cantilever racks. Thus, through the use of new shelving system can be used are available, even smaller, more efficient power.

#### 4.4.2 Mezzanine

A mezzanine is a general term used for any raised platform surface or intermediate floor. Industrial mezzanines are typically free-standing steel structures installed within a building. Mezzanines can be used for virtually any type of application including storage, offices, production, manufacturing and observation platforms, because there are numerous decking options including wood, Resindek, concrete, grating, and steel to fit the various applications.

Mezzanines can be built on site by a contractor although most of the time a mezzanine system is generally pre-fabricated. Meaning it is designed and manufactured at a manufacturing plant then, it is shipped to the building location. An experienced installer can then quickly assemble the components which are pre-drilled, etc. In general, no welding or cutting is required on site.

There are many advantages to using a pre-fabricated mezzanine. Among them are cost, speed of installation, tax advantages, easy customization and space utilization.

A pre-fabricated mezzanine will generally meet all building codes if designed properly. IBC is the most generally accepted building code, but are adapted to the local code if it necessary. An experienced distributor can navigate the process of getting the proper permits for a mezzanine. We will further explain this process to show that is not overwhelming.

The size of a mezzanine can range from 100 square feet to over thousands of square feet.

In general, a pre-fab mezzanine can be a cost effective way to gain more space in your existing or new building. *(AK Material Handling Systems)*

In this case, if you are limited in production capacity, or have enough height hangar, there is another technique you can adopt when planning the production and storing of PVC windows windows. This technique consists in forming several levels of production due to the use of mezzanine floors.

Mezzanine (mezzanine system) mezzanine - a classic way in architecture, were engaged in the construction industry. Outside, a mezzanine - upgrading floor or balcony on the pillars of support. In the 19th century, was used to build the column inlet to the houses of nobles, or to form balconies.

Today mezzanine efficient construction in the storing hall, which can be used for mounting the line at different levels, or to separate the desktop to the other parameters.

#### **4.4.3 Sliding racks**

Another way to flexible organization of storing - the use of mobile racking structure. As needed shelves can be moved around the city in the most convenient way to organize the supply of PVC profiles, to organize production and storing in accordance with the operational situation and needs.

## 5 Conclusions

In conclusion, there were made the recommendations for the procurement department.

<i>What needs to be improved</i>	<i>Who is responsible for this</i>	<i>A class of action</i>
Communication between departments	Head of Procurement	A
The organization of procurement process in a way that the application of the order will be seen by every department of the company (to easily track the current situation of the order)	Senior Manager	B
The absence of the regulations while forming the supply requests of the materials for the procurement department	Procurement Manager	A
The implementation of an automated inventory program	IT department	A
Creating the racks marking in a storage	Storekeeper	C

After the data collection, analysis and gathering the requirements, procurement offered as long term solutions. In addition to the general tool and process change, two focus points were highlighted: the technical approval and the time and material purchasing process.



All the offered solutions might be implemented by the company's purchasing department in Russia.

As the outcome of thesis was to offer at least temporary solutions, the project can be considered as a success. As this thesis concerns the change of a bigger whole – meaning organizational and structural changes - but is limited to the operational purchasing process, it would be ideal to investigate the change management aspect of the event.

The other topic is to continue further the research of this topic, and investigate the suggested long-term solutions.

Today, in the construction and window industry the country is undergoing fundamental changes due to how new approaches to the management of the country's economy, and rather complicated state of the industry. The restructuring of the industry coincided with the economic and financial crisis. Before the construction industry delivered fundamentally new challenges in terms of technical regulation, energy efficiency, the design of new types of buildings and their operation.

The situation will improve when there will be factors that will contribute to the stabilization of the window market: an increase in income of the population, the commissioning of new housing, replacement of windows in the secondary market, the opportunity to purchase window construction loan.

## **6 Discussion**

The main objective of this study was to investigate the needs, values, intentions and strength to ride the current customer base in the Russian windows producing area. The significance of the research is related to the renewal strategy for OKNA ROSTA that is currently reformed from managers. The procurement process is given by the authors on the subject of research as part of his thesis. The research is important for understanding the customer's needs and to assist in completing the company's strategy as a whole.

The purpose of this thesis was to document the operative problems experienced in the project, discuss reasons and consequences, and offer improvement proposals for the found problematic operative procedures. Moreover, the aim was to give ideas where the operative focus should be fixed in order to prolong the project's success. Additionally, the goal was to give an operative overview for further strategic decision making regarding the project's future. The qualitative research methods used for this thesis; committed observation, question forms and interviews, were proven to be purposeful.

The results of the study appoint that the purchasing process of a production company is complex and not good enough.

Furthermore, the clarity, efficiency and repetitiveness of all communication would be a simple, yet effective way to improve the project's operative functionality. Crossorganizational reform, clearly distributed responsibilities and enhancement of processes and communication require proactive grip in order to be realized.

This thesis generated further examinable topics for possible continuity studies relating to the project. These could be the following; purchasing process of a new e-procurement platform, change of a management plan, examination and redesign of company X's indirect procurement working task distribution, research on how to develop e-procurement system to its best with and without financial investments and so on.

I found the interview and discussions helpful. Not all the information I recorded was relevant, but noting what I found informative contributed to my ability to form an overview on re-reading. However, the reliability of the notes can also be questionable.

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## Appendices

Appendix 1. Terminology

*EOQ Economic Order Quantity*

*EDI Electronic Data Interchange*

*ERP Enterprise Resource Planning*

*ISO International Standard Organization*

*JIT Just in Time*

*MRP Requirement Planning*

*OM Operations Management*

*OEM Original Equipment Manufacturer*

*ROP Reorder Point*

*SME Small and Medium-sized Enterprise*

*QM Quality Management*

Appendix 2.

Second appendice