The Project of Inventory Audit Using Selected Inventory Methods for the Chosen Company

Rashad Karimov

M18952

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Zásady pro vypracování

Introduction
Define the objectives and methodology
I. Theoretical part

- Gather theories and prepare a literature review focused on concept and methods of inventory audit.

II. Practical part

- Describe selected company's general overview.
- Conduct financial, fundamental, performance and ABC analysis of the company.
- Determine the efficiency using selected inventory methods for the chosen company.
- Submit the project to Cost-benefit analysis.
- Conclusion

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L.S.

doc. Ing. David Tuček, Ph.D.
děkan

prof. Dr. Ing. Drahomíra Pavelková
ředitelka ústavu

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ABSTRAKT

V posledních letech se s vývojovým zlepšováním nových technologií a přizpůsobováním každodenní interakce s digitálním životem změnil proces „od výroby ke spotřebě“, což také ovlivňuje skladovací a skladovací systém. Proto z finančního hlediska, aby byly stabilní a ziskové, musí mít podniky účinný proces auditu zásob. Hlavním cílem této práce je zlepšit metody inventarizace pro efektivnější audit zásob pro společnost „L'etual“ LLC pomocí metodologie ABC-XYZ, efektivního využití úložiště atd. Po provedení finanční analýzy jsme společnosti doporučili několik řešení, jak zvýšit v oblasti přejímky zboží a implementace systémového čárového kódu zboží; provádění ABC-XYZ analýzy všech produktů organizace; a distribuovat skupiny zboží v závislosti na povaze poptávky a jejích nákladech s několika dalšími řešeními.

Klíčová slova: Inventory Audit, Warehouse Management System, ABC-XYZ metodologie, FIFO, LIFO

ABSTRACT

Recent years, with the evolutional improvement of new technologies and adaptation of daily interaction with digital life, “from production to consume” process changed, which also affect warehousing and warehouse system. That is why, from the financial side to be stable and profitable, firms need to have an efficient inventory audit process. This thesis’s main aim is to improve inventory methods for a more efficient inventory audit for “L’etual” LLC through using ABC-XYZ methodology, efficient usage of storage, etc. After doing financial analysis, we recommended the company few solutions as To increase in the area of acceptance of goods and implementation of the system barcoding of goods; conducting ABC-XYZ analysis of all products of the organization; and redistribute groups of goods depending on the nature of demand and its cost with few more solutions.

Keywords: Inventory Audit, Warehouse Management System, ABC-XYZ methodology, FIFO, LIFO

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CONTENTS

INTRODUCTION

The inventory concept comes from the Latin word "inventorium" which means "to find". Before proceeding with annual reports preparation, each organization is obliged to take an inventory of its property.

The purpose of the property inventory is to verify the accuracy of the balance sheet data and reporting of the enterprise. It allows you to compare the correctness of the documentation of the organization's business operations in a physical meter to identify the actual presence and quality of the enterprise's property. It is impossible not to consider when making an inventory, such negative phenomena as theft, natural loss.

During the inventory, the presence of property values, the state of settlements and financial obligations are checked and documented.

The inventory's order and timing are determined by the head of the organization, except for those cases when the inventory is mandatory. In Czech Republic for example, it is advice to have it at least three times in a year.

The corresponding decision can be issued in the form of a separate order (instruction) for the organization, an annex to the charge on accounting policy, etc. This kind of document establishes the cases of inventories (both planned - monthly, based on the results of the quarter, etc., and carried out depending on the occurrence of certain circumstances), their timing (duration), the composition of the inventory commission, as well as the procedure for conducting an inventory. ... The results of the inventory must be documented in a particular document called "Inventory List". It indicates a specific accounting object's name, its discovered quantity in physical terms (or value). Then these inventories are transferred to the accounting department for reconciliation with accounting data.

On the basis of the reconciled data specified in the inventory list with accounting data, a collation sheet is drawn up, which indicates those positions for which discrepancies were found. In the same collation statement, the inventory result is determined - surplus or shortage, that is, income or expenses. All surpluses and deficits are accounted for in accounting; that is, they are drawn up in accounting records as inventory results.

Based on the inventory results, an act is drawn up, which indicates the total amount of income or expenses, that is, surplus or shortage. The surplus is generally accounted for and is subject to income tax at market value. The act also indicates the shortages, which, by the

decision of the head, can be attributed to the materially responsible person (in this case, an agreement on full material responsibility must be concluded with the materially responsible person) or written off at the expense of the enterprise, that is, as other expenses.

The enterprise is continuously changing the forms of accounting for funds from commodity to cash and vice versa. Only when comparing the documentation with the real presence of material assets, can it be determined whether the accounting and reporting are being conducted correctly.

Inventory audit of a warehouse is a search for ways to improve a warehouse's work as part of the express research of warehouse resources and processes. It can be either a one-time event or a regular one.

Inventory audit is aimed at finding shortcomings in the warehouse organization and in its work and at the formation of proposals for their elimination. In several cases, justification of warehouse automation's need becomes a particular task of inventory audit.

Inventory audit is often considered as a mandatory step prior to the implementation of a WMS system. The results of surveys and recommendations of specialists help to find the best solutions for storing goods, optimizing the performance of warehouse operations, loading and number of personnel, etc. In other words, inventory audit helps to understand what needs to be done in the warehouse in order to put it in order before automation.

Considering efficiency of inventory auditing in warehouse, we can say how important process it is. Therefore, to make this process even more efficient, we will try find a main problems of stocking (inventory) of the company and we will try to find a solutions for that.

I. THEORY

1 THEORETICAL FOUNDATIONS OF THE WAREHOUSE MANAGEMENT SYSTEM

1.1 Goals, objectives, functions of warehouse management

The main function of the warehouse is not only storage, but also after-sales service for consumers of warehouse services: formation of a market assortment, more convenient redistribution of stocks to their places of consumption, assembly of mixed cargoes for shipment, and so on. Therefore, the warehouse is an integral part of the entire logistics system, which helps to determine the strategic benefits: service and economy. Warehousing is an element of the functioning of the whole logistics system. The presence of particular infrastructure within a certain logistics system is a prerequisite for the implementation of the movement of certain products that are suitable for the content of these products in a certain amount, all of which take place in warehouses. A logistics system is an economic system that implements a single process from a system of interconnected elements aimed at regulating material flows in accordance with the goals, needs and objectives of the organization.

Warehousing is understood as a complex of buildings that includes several elements: packaging and unpacking equipment, equipment for unloading and loading goods, devices and equipment for moving, stacking and preparing them for shipment; containers for storing goods during storage, measuring and weighing instruments, marking equipment, firefighting equipment, a computer system for managing traffic, monitoring, accounting and regulation of stocks, racks for placement and storage of goods.

The warehouse is a crucial link in the logistics system through which material flows, and the warehouse is also a technically and administratively complex object, which is the technical and material base for the main links of the logistics system. Warehouses are intended for the temporary accumulation of inventories with the aim of subsequent timely shipments of products and components that are necessary for production or finished goods for end consumers.

Warehouse activity characterizes the level of economic and technical-technological indicators of the enterprise, which are used for the optimal functioning of warehouses and analysis of its effectiveness. The system of data indicators can be divided into two groups,

characterizing the intensity and rationality of the use of warehouse and production space, as well as the intensity of the work of industrial storage and storage facilities.

Thus, the warehouse is one of the main elements of logistic systems, its integrated component. Warehouses are created at the beginning and at the end of material flows, each of which fulfills its functions. To produce certain products, it is necessary to extract raw materials from which materials will be made, according to which

this is a product. For each stage, there are special warehouses, such as supply (supply enterprises with raw materials for production), production (produce finished products from raw materials), distribution (bring finished products to the final customer).

At the beginning of the material flow, suppliers supply raw materials that are processed and then delivered to production, after which finished products are produced from raw materials, in the production of which production tools stored in the tool warehouse are involved, after which

finished products go to the finished goods warehouse, which is related to production, part of the processed raw materials goes to the waste warehouse. After, from the finished goods warehouse, the goods again go to the finished goods warehouse, which refers not to production but to sales. With such warehouses, sales of products begin. In the end, the goods arrive at a wholesale warehouse, wholesale and retail warehouse. Delivery to final consumers takes place from these warehouses.

In this regard, storage facilities are formed for reception material flow with one norm, and in the process of processing at the output, other material flows with other standards are formed, which will already be distributed among consumers.

Purpose of warehouses with material flows:

- Accumulation of the required level of stocks of raw materials, fuel, materials, products, etc., and uninterrupted supply of all consumers by them;
- Ensuring the safety of all material values in the warehouse;
- Organization of rational internal storage and handling operations, which will require the minimal cost of money and labor;
- Appropriate use of storage volumes and areas and operation of equipment inside the warehouse;

- The implementation of the preparation of the necessary material resources for the production process;
- Centralized delivery of products and materials to places of consumption;
- Timely identification and mobilization of excess material assets that are not used for the business needs of the organization;
- Providing the organization with information on the availability of stocks of material assets in the warehouse, as well as their receipt and consumption;
- Contributing to the accurate consumption of materials in accordance with established standards and the efficient use of waste and packaging.

To ensure efficient operation at the warehouse, it is necessary to observe some principles, such as the optimality of the layout of the storage space, the rhythm of loading and unloading operations, compliance with the principle of through traffic. The main purpose of creating a warehouse economy is to ensure the rational storage of material assets and their optimal turnover in the process of primary production.

Warehouses are essential elements of a logistics system. The main tasks of the warehouses should include:

- Organization of normal nutrition of production with appropriate material resources;
- Ensuring the safety of resources;
- Maximum reduction of costs associated with the implementation of warehouse operations;
- The establishment of the number of storage points necessary for the enterprise and their rational placement on the territory of the enterprise;
- Determination of the required storage space and the construction of convenient storage facilities;
- Timely equipment of warehouses with loading and unloading mechanisms, racks, devices for counting and weighing small parts;
- Organization of procurement department.

To fulfill the specified purpose, warehouses should provide the performance of the following functions

- accumulation of necessary reserves of material resources and uninterrupted supply of all consumers to them;
- ensuring the safety of material assets;
- rational organization of loading and unloading and storage operations with minimal labor and cash costs;
- efficient use of storage facilities and their equipment;
- preparation of material resources for production consumption;
- delivery of materials to places of consumption;
- information on the level of stocks, their receipt and consumption.

Imagine the dependence of the tasks and functions of the warehouse in table 1.

№	Task	Functions
1.	Storage, reception, accounting and shipment of finished of goods	- Acceptance, sorting and packaging of finished products. - Establishment of the need for mechanized loading storage areas - Preparation of reports on production volumes
2.	Formation condition for safety of goods which are on temporary storage	- Organization of internal transportation, rational storage, preparation and packaging of goods for shipment. - Ensuring the safety of the goods. - Preparation of documents on the status of stocks of products in stock. - Drawing up documents (certificates, acts, correspondence, information about the damage to goods. - Ensuring the proper level of automation and mechanization of transport and storage

		movements, the use of computer systems and regulatory conditions for labor protection and organization
3.	Accounting and conducting inventory goods that are located on temporary storage	- Accounting for goods in stock. - Formation of pantry books, receipts and consumables, cards, descriptions of warrants for accounting for consumption, receipts, availability and balances of goods in stock. - Accounting for the execution of orders for unloading and shipment of goods. - Generation of reports on loading warehouse space

Table 1 - Tasks and functions of the warehouse

The functions and tasks of warehouse logistics allow you to develop and implement measures to redistribute material, financial, information and transport flows within the enterprise.

Based on the foregoing, it can be concluded that warehouse facilities are formed at the beginning, in the production process and at the end of production activity or transport cargo flows to ensure timely provision of commercial and industrial structures with material resources in accordance with market or intra-company needs, as well as temporary accumulation cargo. In the process of processing and storage, material flows enter with some parameters and exit with others. That is why there is a broad classification of warehouses, which occupy an essential role in the logistics system.

1.2 The essence, classification and description of the types of warehouses

Enterprises that are engaged in the production of any products or companies that require consumables to provide services, have requirements for storage facilities. The warehouse is

of great importance in the general economic complex of the enterprise and organizations in which the structure of the company is the most developed.

A modern warehouse is a rather complex object, both from the technical side and from the managerial. There is a need for storage at all stages of production, from the place of extraction of raw materials to the sale of goods. Therefore, there are a large number of different warehouses that need classification. Before considering the variety of warehouses, for starters, it is necessary to consider the structure of the warehouse, i.e. zoning of warehouses, equipment used, etc.

A warehouse is not just a room with various cargoes. It has a certain internal structure, which can be quite developed. The warehouse consists of several zones that differ in purpose and equipment used.

The following main zones are distinguished:

1. Loading and unloading area. It can be whole or divided into two separate. In this zone are areas directly in contact with transport. Site requirements vary depending on the vehicles served.
2. Acceptance zone. This area is usually separated from the rest of the premises. In it, goods are received and their further direction to the storage place. As a rule, this zone has high automation.
3. Storage area. She is occupied by equipment designed for storage of goods.
4. Sort area. Provides acceptance of applications for the transportation of goods and their movement from storage to the loading area.
5. Forwarding area. The accounting of consignments is carried out, accompanying documentation is compiled.
6. Administrative and household premises.

A variety of equipment is used for storage and transportation of goods. In warehouses with small loads, manual devices are widely used, heavy and oversized items are moved by cranes and loaders.

Modern markets are quite volatile, and companies often need to look for new premises for warehouses to achieve the most efficient work. In this situation, the choice of warehouse is

set for the tasks of specific employees. In order to find a property, it is necessary to formulate reasonable and clear requirements.

To do this, requirements of the company should be determined, otherwise there will be an inefficient cost of funds. Excess warehouse space will require more payment, and productivity will remain at the same level. If, in addition, the technology of cargo handling is irrational, then the picture will become even worse.

The main parameter by which warehouses are classified is their purpose. Depending on it, the following types of warehouses can be distinguished.

- Production - they are located at enterprises for the storage of raw materials, materials, components and finished products
- Transit and transshipment. They are located near the railway stations of ports, airports, automobile terminals for short-term storage of goods during their transshipment between various modes of transport.
- Customs. Designed for storage of imported or transit goods awaiting customs clearance.
- Wholesale distribution. Warehouses that supply goods networks.
- Retail. Are warehouses of trading enterprises
- Standby. Warehouses for emergency storage

Depending on the destination, the warehouses differ in size, design schemes and other characteristics. So, the area of warehouses can be measured from several hundred to several hundred thousand square meters. The height of cargo storage can also be different - if in some warehouses everything is located at a maximum at the height of human growth, then in others the load can rise by 25 meters or more.

Depending on the design, warehouses are:

• Closed - they are in separate rooms;

• Half-closed, the design of which provides for the presence of one two or three walls;

• Open, which are located on specially equipped sites.

Also, in the warehouse specific conditions can be created for the storage of certain goods - for example, temperature, humidity and so on. Warehouses differ and depending on the

degree of mechanization of operations, this indicator determines the following types of warehouses:

• Non-mechanized;

• Warehouses with complex mechanization

• Automated;

• Automatic.

One of the important features of the warehouse is the possibility of import or export of goods by rail or water. Classification on this basis distinguishes such warehouses as:

• Stationary - located on the territory of the railway station;

• Portside - located on the territory of a sea or river port;

• Railroad - have an access road for supplying railway wagons;

• Deep - warehouses, delivery to which from the port or station is carried out by road.

The breadth of the assortment of stored goods is also an important indicator characterizing the warehouse. Existing:

• Specialized warehouses intended for storage of only one type of cargo;

• Warehouses with a mixed assortment, where several types of cargo can be stored;

• Universal warehouses designed for most types of cargo.

Russia has its own classification of warehouses, which is slightly different from the international classification. Many organizations that have experience in evaluating commercial real estate and logistics have their own systems for organizing warehouses.

Of interest is the system of the St. Petersburg group of companies "RMS". This classification was developed in the Russian Federation, therefore, it takes into account the features of the central regions of Russia and the basic requirements that tenants and buyers pay attention to first of all. In accordance with this classification, warehouses are divided into four groups, denoted in capital Latin letters.

Class A warehouse is a modern one-story building, during the construction of which all prescribed technologies were observed and only the best quality materials were used. Warehouses of this class must meet the following requirements:

- Floor with anti-friction coating, free of defects and completely even surface;

- The ability to place multi-level racks, which means a building height of at least 8m;
- The ability to regulate the temperature regime inside the building;
- Powder or sprinkler type fire system with alarm;
- Thermal curtains on gates;
- Automatic dock type gates, which are equipped with a hydraulic ramp with the possibility of adjusting them in height;
- Video surveillance of the surrounding space and internal storage areas with the presence of burglar alarms;
- Availability of telecommunication lines of fiber-optic type;
- Location near the central highways with convenient access;
- Presence of air conditioning system;
- Warehouses combined with office premises;
- A large area for the possibility of heavy-duty articulated trains to move freely and stand in a sludge.

Class B:

- Height of the building from 4.5 to 8 m;
- Warehouses combined with office premises;
- Territory under protection
- Multi-floor building with major repairs;
- There is an unloading platform;
- The temperature inside the building is in the range from +10 to +18 ° C;
- Telecommunication systems;
- Floors without any coating of asphalt or concrete;
- Availability of fire protection systems.

Class C:

- The possibility of transport to go inside the building;
- Height of the building is from 3.5 to 8 m;

- Insulated hangar or industrial premises with major repairs;
- Concrete, tile or asphalt floors without any coating;
- Rooms are heated, the temperature regime varies from +8 to +14 ° C in winter.

Such requirements can be considered very stringent, so not all structures satisfy such conditions.

The lowest requirements apply to class D warehouses. The following premises can be attributed to this class of warehouses:

- Hangars;
- Basement;
- Unheated industrial buildings;
- Civil defense facilities.

Separately, it should be said about specialized customs warehouses in which goods are imported into the Russian Federation or exported from the country. Usually these are warehouses with a large area - from 5 thousand m2, often called terminals. Storage in these warehouses is carried out in accordance with the Customs Code of the Russian Federation. Temporary storage warehouses are distinguished from customs warehouses, where there are items subject to both export and import, from providing them to the customs authority until release into free circulation. During storage of goods in a customs warehouse, they are not charged duties and taxes, and economic policy measures are not applied.

The variety of types of warehouses in the logistic system suggests that the functions and tasks that warehouse managers perform are very diverse and require their systematization. In the course of the analysis, we can conclude that the classification of warehouses in the logistics system reveals certain signs of systematization of the warehouse structure as a component of the logistics system, which affects the characteristics of the movement of material flow.

1.3 The principles of the organization of the warehouse

When the management of the company realizes that the work of the warehouse is really part of the business process, the question arises before him: how to more efficiently analyze the warehouse management. This work is based on nine principles that are characteristic of every household without exception. If you try to follow these principles, you can achieve

some stability in the activities of the warehouse. For the storekeeper, they are something taken for granted, but for the logistician, no. Therefore, they should be considered in more detail, since taking these principles into account greatly simplifies the procedure for analyzing warehouse activities.

1. A clear delineation of liability. In the warehouse management, there must certainly be one person responsible for all goods and equipment of the warehouse, as well as for surpluses and shortages.
2. Organization and control. Absolutely any activity, including warehousing, needs to be organized and controlled. To carry out such work in the warehouse should be one person, not several. Since competent organization and control are inseparable from material responsibility, the following principle becomes obvious.
3. Unity. And the organization, and control, and material responsibility should be concentrated in the hands of one specialist. It can be called by different names: the head of the warehouse, the organizer of warehouse activities, the manager, or otherwise.
4. Strict material reporting, and always in real time. These are the most important and at the same time the most downtime for the implementation and understanding of the principle. Take for example, this situation. The truck with the goods is at customs, and the goods have already been entered into the computer database. The managers of the commercial department see that the product is in stock and offer customers to purchase it. Orders appear, but there are difficulties at customs, due to which the truck is standing there for a week. Its result is dissatisfied customers who could not receive the products on time.
5. Planning the management of the warehouse. Any work, including warehousing, must be carried out in accordance with a specific plan. Delivery times may vary depending on the characteristics of the warehouses. Quite often it happens that when the goods arrive at the warehouse, the storekeeper does not expect it, that is, it is a surprise for him. Naturally, the storage space in this case is determined by the fact, and not in advance, as it should ideally be.
6. Strictly defined method of moving material assets on stock. Most often it is either FIFO, or LIFO, or a mixed option. The main thing is that it be clearly defined and strictly carried out by storekeepers.

7. The correct arrangement of material assets how convenient are the goods in the warehouse for company employees, depends on the speed of warehouse processes and the simplicity of their implementation. At in most cases, the correct use of shelving will make work at the warehouse is more efficient and orderly.

    1. The choice of shelving should consider all the parameters associated with the type of product, its dimensions and weight, requirements for the shelf life, processing features and subsequent transportation. A large assortment of goods may require the use of various types of racking equipment, which in turn is associated with attracting professionals in this area. Leading companies engaged in the production of warehouse equipment and machinery have the necessary experience and knowledge to offer one or even several options for organizing warehouse management. This will allow you to consider the problem from different angles and get the best solution suitable for all parameters. Moreover, the proposed solution may not be the cheapest, but in the long run, it will significantly save money due to both the innovative approach to organizing warehouse management and the high quality of the racks themselves

8. Scheduled regular inventory. Consider this principle in detail.

Inventories are usually understood as revisions. Sometimes it is carried out only so that the storekeepers “did not relax”. True goal however inventory - analysis of labor results. This is a powerful tool of warehouse performance. Practice shows that a third of all discrepancies in the quantity of goods available and taken into account in documents appear due to poor work of storekeepers, the remaining two thirds arise due to incorrect organization of warehouse processes or due to an outdated form of control. Specifically, these shortcomings should be identified by the inventory, which must be carried out regularly.

Naturally, this event takes time. In addition, it must be carried out when the warehouse is at rest. This means that for effective inventory it is necessary at times to interrupt all the work processes of the company or to do it on weekends. Time is needed to process the results.

Is it possible to somehow accelerate this process without reducing its effectiveness? Of course. Each warehouse has products that allow fewer errors when working with which than with the other. Therefore, it is not necessary at all times to recount all goods in stock.

Years of practice have shown that there are certain postulates, according to which the warehouse works. For example, the more transactions are performed with a specific product for a certain period of time, the greater the likelihood of an error. Its degree can be calculated by the number of goods exits from the warehouse.

Of course, this is not the only criterion. Probability of errors.

It also depends on other factors: high price, single output, similar packaging, etc. The number of outputs should regulate the coefficient, which is determined using a special assessment, the experts of which are primarily the storekeepers. To establish this indicator, it is necessary to take into account the results of previous inventories and the specific features of a particular warehouse.

9. Strict regulation of the presence in the warehouse. Warehouse workers should have clear instructions on who and when should be at the workplace. Neither movers nor managers should violate this instruction.

The nine principles of organization listed above apply to any warehouse management, without exception, and their observance is a kind of guarantee of its stability and efficient operation.

There are several principles that distinguish between mid-level warehousing and very unprofessional warehouse management from the organization of warehouse management at the level of world standards. These principles are based on the results of a study and generalization of the experience of many warehouse projects, which include projects for creating a warehouse from scratch, creating warehouse technology, developing and implementing warehouse management systems, developing warehouse topology, optimizing warehouse processes, and borrowing experience. These principles are the common denominator of effective warehouse technology and successful projects.

Analysis of the warehouse is the first principle. This analysis is designed to identify the prerequisites for the emergence of problems and the possibility of improving the work of the warehouse by creating and constantly updating the “profile” of the warehouse, which consists of an analysis of the movement of commodity items orders, and work planning.

The second principle is benchmarking - a technique due to which someone else’s experience is used to improve business processes, achieve the best achievements of the best manufacturing companies, individual specialists to improve work efficiency, and division of the company itself. This method is used to identify opportunities for improving some

processes and its weaknesses, as well as to assess possible investments in new information systems and warehouse equipment. The development of the organization is due to the continuous comparison of the applied warehouse technologies for organizing the operation of its warehouse and the used warehouse infrastructure with international standards. At the first stage, the work of the warehouse and the possibility of introducing borrowing experience are analyzed, money for information systems and new equipment has not yet been spent, because all the work is presented only on paper. It is at these stages of reengineering that the costs of changing a project are minimal, and the opportunities for improvement are maximized. In the process of development of the project, moving from the conceptual stage to the stages of implementation, detailed design, debugging and maintenance, there is less and less room for improvement and the cost of making changes to the project is growing exponentially. Therefore, the stages of creating the concept and the preparatory stage are considered the most significant in the project.

The third principle is innovation. The maximum change in warehouse processes through the simplification or reduction of work performed. It is necessary to concentrate on two types of activities, changes in warehouse processes, which include most of the work in warehouses, this is information and cargo processing. Innovation follows benchmarking and analysis of the warehouse, because developers need the results of the analysis in order to create new processes with minimal labor and creativity, and the use of other people's experience will be needed to know the goals of creating new processes and understanding the amount of costs needed to formulate new concepts .

The fourth principle of successful implementation of warehouse processes is automation. This principle includes mechanization and computerization. Mechanization is a growing number of implementations of mechanized systems for storage and processing of goods and an increasing need for applications to increase the density of warehouses, improve the throughput capacity of warehouses, and also assist warehouse workers in carrying out heavy operations of goods processing.

Computerization is a growing number of implementation of warehouse management systems, paperless decision-making software tools that support the functions of monitoring warehouse processes, using resources, analyzing warehouse activities, and helping to improve warehouse operations to simplify work.

Mechanization (in all respects) follows computerization because computerization and simplification of processes should reduce the number of mechanized actions. Investments in software and hardware are inherently more flexible than investments in mechanization.

Computerization immediately follows innovation, because the leading role of a computer is to control new, simplified processes and their support. The requirements for paperless work technologies and warehouse management systems should naturally follow from the understanding of the processes that came to the time of simplification.

The involvement of personnel in the work of warehouse processes is the last principle. Warehouse operations can be improved and simplified by setting individual and collective goals in the work, involving warehouse workers in the process of changing warehouse processes, and through the introduction of the innovations we have requested in each group of warehouse processes for manual labor in the warehouse. The involvement of personnel is the fifth stage, because the whole set of requirements for the professional skills of workers and their cultural level are not known until each of the previous principles is fully implemented. The recommendations that can be given in this principle can be expressed in simple words: treat people the way you want them to treat you. This approach always works.

As a result, we can say that the application of these principles in this order should be used for reengineering warehouse operations, creating warehouse concepts, developing requirements for a warehouse management information system and for projects to improve warehouse processes.

1.4 Inventory accounting

The warehouse is designed to store the material stock of the enterprise. Correctly organized warehouse accounting in production and in the sale of goods allows you to avoid losses of commodity units, as well as theft of material values.
The accounting treatment differs depending on how the materials are stored and on other factors, such as the frequency of goods entering the warehouse.

1.4.1 Varietal accounting method in the warehouse

It is recommended to use the varietal methodology if the goods are distributed in the warehouse in accordance with the varieties and names, regardless of when the products arrived and what their cost.

The received products are stored and accounted for together with the goods already stored in the warehouse. The person who is financially responsible for accounting is obliged to open a warehouse inventory card for a product range or, depending on the volume of transactions for the receipt and consumption of material, leave a certain number of pages in the storekeeper's book.

The range of products differs in this case not only by the type or brand of the product. The variety, the color of the product, and the unit of measurement can be important. Therefore, accounting must be kept separately.

The color of the product is important, for example, when selling cars, while when selling milk, the color of the packaging does not play a special role.

With warehouse accounting of materials, carried out in accordance with the graded method, the warehouse area is used rationally, the balance of products is managed faster, but it is difficult to distinguish goods of the same grade that arrived at different prices. There is no separate analytical accounting for prices or lots. Proceeding from this and the fact that the conditions of the free market make it possible to assign a different price to a product of the same type, the choice of a product for sale is arbitrary.

1.4.2 Batch method of accounting for goods in the warehouse

As the name suggests, this accounting methodology is based on shipments that arrive at the warehouse. According to the batch method, a batch of goods received under one consignment note is stored separately.

Nevertheless, the composition of each batch may contain different categories of goods, grades and names. Each batch, which means the goods arriving simultaneously with one transport document, are stored separately.

The batch can include goods of different grades and names. The received batch is registered in a special register of incoming products. The batch number is a serial number during registration; it is indicated in the expense documents along with the name of the goods released from the batch.

It should indicate:

- number,
- date,
- warehouse number,
- last name, first name and patronymic of the person receiving the goods,

- provider,
- quantity of goods (indicating price, grade and name),
- storage place (for food products - the total number of places;
- for non-food - the number of each seat).

The consumable part of the lottery card shall include:

- vacation date,
- Document Number,
- quantity in physical terms of goods released,
- balance of goods at the end of the month,
- total for the month.

Records for the food part of the goods are kept by a linear positional method for a single container, up to the introduction of a specific commodity unit. This is especially important when keeping records of products that have a unique serial number, for example, when selling jewelry.

1.4.3 Other methods of inventory control of goods

In addition to the above accounting methods, which are considered basic, there are also general recommendations that can be used when accounting for material values in a warehouse, automate and speed up the selection and placement of goods.
For example, a product that is in high demand should be located closer to the aisle. Based on this location, you can choose a place to place certain products. It is also better to provide the most rational location for goods that are stored for a long time and for products with a short shelf life.
Products can be placed in accordance with their name, and for small wholesale or retail - grouped according to the size of the product. In this case, a section is allocated for each size: small goods, medium and large. Based on the existing or anticipated turnover, it is possible to calculate the ratio of the number of small cells, medium and large.
There is also the possibility of automating warehouse accounting using special computer programs and web services that quickly and accurately systematize data on quantitative accounting, goods receipts and shipment, according to incoming and outgoing documents.

Thus, when keeping records of goods in the warehouse, a fairly large number of methods and techniques are used. The principle of warehouse management depends on the profile of the enterprise, as well as on the specific conditions existing in the warehouse itself.

2 ANALYSIS OF THE STATE OF THE WAREHOUSE ECONOMY ON THE EXAMPLE OF THE ORGANIZATION LLC "L'ETUAL"

2.1 Description of the financial and economic situation of LLC " L'etual"

The company "L'etual" is one of the leading and most stable companies in its industry in the market of Tomsk. The main activity of the organization is the sale of specialized products to professional beauty salons. The company has existed since 1991. Since 1998, the company begins wholesale and retail trade in such products as cosmetics, perfumes, household chemicals, household goods. LLC "L'etual" was registered on December 28, 2002 by the registrar Interdistrict Inspectorate of the Federal Tax Service No. 7 in the Tomsk Region. Head of the organization: director Erlykov Sergey Gennadevich. The legal address of LLC "L'etual" is 634034, Tomsk region, the city of Tomsk, Nakhimova street, 8 p.6. The main activity is "Other retail sale in non-specialized stores". Since 2002, the organization moves into the field of professional cosmetics and begins to deal with the complex equipment of beauty salons. The organization also engages in additional activities, such as:

- activities of advertising agencies;
- activities of agents in wholesale trade of a universal assortment of goods;
- retail sale of cosmetics and perfumes in specialized stores;
- market research;
- activities for continuing professional education.

The organization also has service facilities: a warehouse facility, as well as its own fleet of vehicles for delivering goods to customers.

At the moment, there are two separate units in the cities of Kemerovo and Novokuznetsk. The sale of goods can be carried out both at retail and wholesale.

The number of workers in the organization in Tomsk is 37 people, the main competitors are organizations: ESTEL TOMSK LLC, Siberian barber, Perfume Novosibirsk. The main suppliers of products: WELLA, LONDA, Schwarzkopf, Kapous, it is under these brands that most products are sold. The clients of LLC "L'etual" are beauty salons, hairdressers, professional shops, in total, there are about 1300 product customers in the Tomsk Region. The organization consists of a non-profit partnership "Tomsk Association of Hairdressers and Beauticians", which actively provides the following services:

1. Distribution and assistance in introducing advanced technologies in hairdressing and cosmetology.
2. Participation in the system of training and professional development of professional personnel.
3. Assistance in the acquisition of technologically effective equipment, devices, special equipment.
4. Carrying out marketing research of the market of hairdressing services.
5. Organization and holding of seminars, lectures, “round tables” on issues that meet the objectives of the partnership.
6. Creation of an expert commission to assess the level of training of hairdressers, preparation of recommendations for the development of training programs.
7. Holding professional championships in hairdressing.

The purpose of the organization is to provide professional assistance in the full or partial equipping of workplaces and the interior in the field of beauty and health services, ensuring a stable supply of consumables, necessary tools and accessories. The organization’s mission is to provide beauty salons with professional cosmetics, which guarantees a high degree of reliability and quality at an affordable price level for salons. Table 2 details the company's mission.

Areas of activity	**Recommendations for improvement**
Sale	At the appearance of the demand for goods, an offer must constantly be present in order to satisfy the client in all his needs.
Cooperation	With understanding and respect, he treats business partners, as well as actively working with them, increasing the scope of business relations.
Staff	Be attentive to his needs and needs, contribute to the growth of labor returns.

External environment	To contribute in every possible way to the development of stability in the economic and social plan, as well as the environmental safety of the environment.

Table 2 - Organization Mission

This helps to facilitate the receipt of the necessary information, and also helps to more professionally serve the client.

Let us move on to the analysis of the financial and economic situation of LLC "L'etual". The balance sheet is the most important form of accounting (financial) statements of a commercial organization (enterprise), which allows you to obtain information about the most significant characteristics of its financial condition: property status, financial stability, solvency and liquidity. The balance sheet of the organization LLC "L'etual" is presented below in table 3.

	2015	*2016*	*2017*	*2018*
Stocks	25624	28654	30867	49203
Accounts receivable	1750	2034	7061	6814
Cash and cash equivalents	440	1453	524	3052
Total current assets	27814	32141	38452	59069
Share capital	10	10	10	10
Retained earnings	27386	31481	38410	58573
Total capital	27396	31491	38420	58583

Short-term payables	418	650	32	486
Total current liabilities	418	650	32	486
Balance	27814	32141	38452	59069

Table 3 - the balance sheet (in thousand rubles)

The balance sheet is the most important form of financial statements, which can be used to judge the financial condition of an enterprise, what property it has and how much debt it has. A balance is necessary so that people who have any relationship with the organization or plan to cooperate with it can evaluate its financial situation, how well the business is going and whether bankruptcy is about to occur.

Balance is a unity of quantity and quality, that is, a document characterizing a certain organization from both the economic and legal sides.

	Relative deviation (thousand rubles)			**Deviation in%**		
Year	2016	2017	2018	2016	2017	2018
Stocks	3030	2213	18336	111,8	107,7	159,4
Accounts receivable	284	5027	-247	116,2	347,1	96,5
Cash and cash equivalents	1013	-929	2528	330,2	36,06	582,4
Total current assets	4327	6311	20617	115,5	119,6	153,6
Share capital	0	0	0	100	100	100

Retained earnings	4095	6929	20163	114,9	122	152,4
Total capital	4095	6929	20163	114,9	122,0	152,4
Short-term payables	232	-618	454	155,5	4,9	1518,7
Total current liabilities	232	-618	454	155,5	4,9	1518,7
Balance	4327	6311	20617	115,5	119,6	153,6

Table 4 - Deviations of the main indicators of the balance sheet

The table of deviations of the main indicators shows that the stock of the organization increased slightly against the general background of the profit of the organization, which means an increase in sales. The increase in cash indicates, as a rule, to strengthen the financial condition of the company. However, the presence of large cash balances over a long period of time may be the result of improper use of working capital, this indicator increased by more than 5 times. Accounts receivable decreased by about 3 times, which indicates that the company's customers began to pay their bills earlier. The increase in retained earnings suggests that the company's equity has increased.

The total amount of property of the enterprise and the dynamics of its change during the period under review are presented in table 5.

Assets	2015	2016	2017	2018	**Deviation in%**		
					2016	2017	2018
1. Non-current assets	0	0	0	0	0	0	0

2. Current (current) assets, including:	27814	32141	38452	59069	115,6	119,6	153,6
Stocks	25624	28654	30867	49203	111,8	107,7	159,4
Accounts receivable	1750	2034	7061	6814	116,2	347,1	96,5
Cash	440	1453	524	3052	330,2	36,1	582,4
Balance	27814	32141	38452	59069	115,6	119,6	153,6

Table 5 - the composition of the property of the enterprise

The current assets of the organization in the period from 2014 to 2016 increased, which indicates a positive phenomenon, however, it should not become a reason for reducing the turnover of funds and solvency of the organization. The decrease in accounts receivable while increasing revenue indicates that the policy of settlements of the enterprise with customers has improved.

In the organization's assets, the share of current assets is 100%, and non-current assets 0%, which means the absence of fixed assets of the organization, which has only reserves, cash, etc. LLC "L'etual" rents working premises from IP Erlykova S.G.

Analysis of the organization's debts allows you to determine its position in terms of commercial lending, that is, to establish whether the organization is a net borrower (excess payables) or a net creditor (excess receivables). Data on accounts payable and receivables are presented in table 6.

Indicators	2015	2016	2017	2018	**Deviation in%**		
					2016	2017	2018
Accounts receivable	1750	2034	7061	6814	284	5027	-247
Accounts payable	418	650	32	486	232	-618	454

Table 6 - payables and receivables

The excess of accounts receivable over accounts payable in the reporting year by 6814 thousand rubles. is positive for the company, as the company is obliged to repay accounts payable regardless of the state of the receivable. A significant portion of current assets is exposed to the risk of losses due to dishonesty of partners in business operations. The occurrence of losses due to non-fulfillment by the counterparty of its obligations leads to the realization of the risk of a decrease in financial stability. But, the presence of a company receivables does not threaten it with guaranteed financial losses and finally lost profits. On the contrary, a well-designed system of receivables management will allow the company to increase its portfolio of orders and the value of operating profit.

Form No. 2	2015	2016	2017	2018	Changes 2016/2015	Changes 2017/2016	Changes 2018/2017
Revenue	133780	129156	137896	174707	96,5	106,8	126,7
Cost of sales	102577	99865	104250	130371	97,4	104,4	125,1
Gross profit (loss)	31203	29291	33646	44336	93,9	114,9	131,8
Business expenses	23142	24546	26041	23170	106,1	106,1	89,0
Profit (loss) from sales	8061	4745	7605	21166	58,9	160,3	278,3
Current income tax	875	650	676	1003	74,3	104,0	148,4

Net income (loss)	7186	4095	6929	20163	57,0	169,2	291,0

Table 7 - Report on financial results (in thousand rubles)

The table shows that the main indicators of financial results in the reporting period increased significantly. So gross profit increased by 20 804 thousand rubles. or almost 38%. This was facilitated by an increase in revenue by 56,928 thousand rubles. or 30%. A 27.7% increase in prime cost had a negative effect on gross margin. Profit from sales increased in the reporting period by 219%. This increase was also facilitated by an increase in revenue and a decrease in selling expenses by 17%. Reading profits increased only over the past year by 13,234 thousand rubles. The net profit was negatively impacted by such an indicator as the current income tax, although it occupies a small part of the revenue.

The condition and guarantee of the survival and development of any enterprise, as a business process, is its financial stability. If the enterprise is financially stable, then it is able to "withstand" unexpected changes in market conditions and not be on the verge of bankruptcy. Moreover, the higher its stability, the greater the advantages over other enterprises of the same sector of the economy in obtaining loans and attracting investments. A financially sustainable enterprise is timely paid for its obligations with the state, extrabudgetary funds, personnel, and contractors.

The financial stability of the enterprise is its reliable guaranteed solvency under ordinary business conditions and random changes in the market. In table 8 we will calculate some indicators of financial stability.

Name	Recommended value	Value 2016	Value 2017	Value 2018
Equity ratio	>0,1	0,9797	0,99	0,9918
Autonomy ratio	>0,5	0,9797	0,9991	0,9918

Financial stability ratio	0,5-0,7	0,9797	0,9991	0,991
Debt to equity ratio	<0,7	0.0472	0.0904	0.0951
Equity capital flexibility ratio	0,2-0,5	1	1	1
Overall coverage ratio (level of solvency)	1-2	49,4	1201,6	121,5
Financial leverage ratio	1-2	0,0206	0,0008	0,0082
EBITDA		8061	4745	7605

Table 8 - Report on financial results (in thousand rubles)

The analysis shows that the current liquidity ratio in the reporting period is above the normative value of 2, which indicates that the company is fully provided with its own funds for conducting business activities and timely repayment of urgent obligations. A fairly stable financial condition is evidenced by the fact that at the end of the period the ratio of own working capital was 0.9918, i.e. 99.2% of the organization's own funds are directed to replenishment of current assets. The results obtained make it possible to see that the organization under study is characterized by rather high independence from external sources of financing, the autonomy coefficient of the organization as of the reporting date was 0.9918. The obtained value indicates the optimal balance of equity and borrowed capital. The ratio of borrowed and own funds is gradually increasing, which indicates an increase in the financial independence of the organization. The financial stability ratio is also approximately kept at the same level, this suggests that the organization does not lose permanent sources of financing. The financial leverage ratio is 0.0083. This means that for

every ruble of own funds invested in the assets of the enterprise, 0.01 rub. borrowed money. A growth in the indicator over time by 0.0075 indicates an increasing dependence of the organization on external investors and creditors, i.e. about some decrease in financial stability.

In the end, we can conclude that the analysis of the financial and economic structure of the organization shows good performance. The organization is financially stable and self-sufficient; profit and net revenue are growing every year. You should pay attention to the indicators of production costs, since this trade organization, and the essence of the activity is the resale of products, you must be careful with increasing prices for goods, take into account customer profitability and general inflation in the country.

2.2 Organization of storage facilities in LLC “L’etual: key problems

Technological maps of warehouse work reflect the entire technological process of processing goods in a warehouse, receiving material assets, and also storing them. Improving warehouse processes should begin with optimizing supplies to the warehouse of goods and materials, since it is with this process that all the main work begins. There is a Scor program aimed at optimizing the supply process. Within the framework of this program, each group of processes is given a characteristic of their sequence and interconnectedness, as well as ways to increase efficiency based on controlling and benchmarking procedures. The program provides the best practical technologies for the implementation of individual groups of processes.

With regard to practice, the model identifies five groups of performance indicators, which determine the effectiveness of the organization of the logistics chain:

1. The first is the reliability of deliveries, which is determined by ensuring the delivery of a pre-agreed product, a pre-agreed package with other essential characteristics, at the right time and place, in good condition, packaging and with the right documentation.
2. The second group of indicators is called the response from the supply chain. Thanks to the response from the supply chain, the manufacturer, consumer, client, operator can in real time monitor the speed of goods passing through the supply chain.
3. The third group is indicated by the agility of the supply chain. Maneuverability of the supply chain is the pace at which participants in the chain are able to respond to changing market conditions, and, thanks to this, retain competitive advantages.
4. Costs in the supply chain are the costs associated with operations in the supply chain.

5. The last group is represented by the board of assets in the supply chain. It involves assessing the effectiveness of asset management through financial analysis of business activity in financial stability, financial leverage, factor analysis, analysis of the management of fixed assets, stocks and working capital.

Thus, the SCOR program is focused not on the final goal, but on the analysis of the process and its optimization. Using the program is very useful for the transport and logistics company, because it allows you to track all the logistics processes in the chain in real time and at the same time carry out their constant optimization.

Irrational use of storage space is a very serious problem for all enterprises and organizations. The placement of goods for storage must be carried out in such a way that during subsequent technological operations the number of movements of warehouse employees is minimal. For this purpose, all commodity items are divided into 3 groups, after which "hot" and "cold" warehouse zones are allocated for their storage. In order to make the optimal division of the entire nomenclature, a rational solution would be to use the ABC-XYZ analysis method presented in Figure 1.

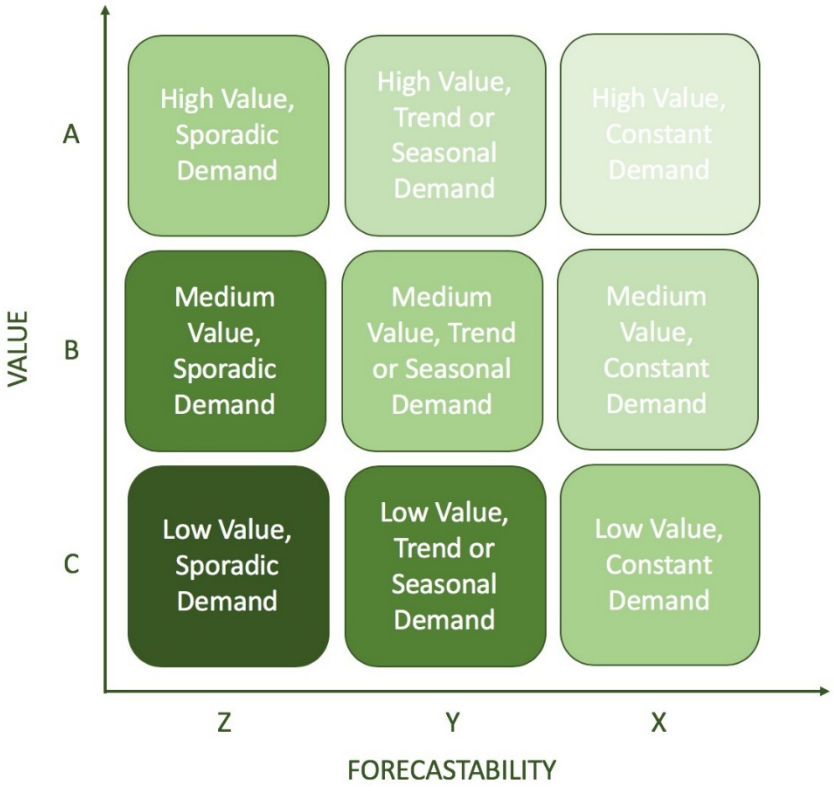

Figure 1 ABC-XYZ Analysis

In this case, as applied to the technological process, the main criterion for dividing the product items into groups will be the number of approaches / movements of warehouse personnel when performing technological operations, in particular during the procedure for picking orders for production or for customers.

After the ABC-XYZ analysis, the stock rate for each heading in the warehouse is calculated at a time, then the number of storage locations for each heading is determined and placed based on the analysis. The "hot" zone, as a rule, is located closer to the shipment zone, on racks located in the central passage, in the lower tiers of the racks. This placement can significantly reduce the time it takes to perform technological operations (placement for storage, packaging, etc.)

So, the use of combined ABC and XYZ analysis will allow:

- Increase the efficiency of the inventory management system;
- Increase the share of highly profitable goods without violating the principles of assortment policy;
- Identify key goods and reasons affecting the number of goods stored in the warehouse;
- Redistribute staff efforts depending on qualifications and experience.

Organization of the effective work of the warehouse is an activity that affects all levels of management. Optimization of warehouse logistics cannot be the prerogative of only managers directly involved in the storage and preparation of products. There is a management school (Russian School of Management), which has developed a series of seminars on logistics and warehouse activities that will be of interest to both the directorate of warehouse facilities and local managers. A distinctive feature of these programs is a workshop on warehouse logistics in each of the areas, as well as an analysis of real cases and situations together with an experienced teacher.

Recently, the demand for warehouse managers has increased significantly, in most cases this is due to the intensification of the business environment, an increase in commodity circulation. With the growth of the company’s sales turnover, the tasks of effectively organizing the supply, storage, distribution of goods and materials arise. The company should create such a scheme of inventory management that would most fully take into account market fluctuations in consumer demand and supply of suppliers, exclude overstocking of stocks and irrational use of space.

In connection with these factors, not only the demand for this category of managers is growing, but also the requirements for them, functional responsibilities are changing. Among the new requirements for the position of warehouse manager can be called fluency in PCs, because when managing a modern warehouse economy, information technologies, knowledge of the basics of logistics, and administrative skills are actively used.

In order to carry out logistic optimization within the warehouse processes of goods distribution, an economic toolkit is required that allows evaluating the results of the warehouse operation and the costs of its operation, making rational choices of the type of warehouse and storage method, and reasonably planning logistics operations. It is necessary to have a system of indicators that reflects the main characteristics of the functioning of the logistics system of the warehouse complex.

The warehouse area in the organization LLC L'etual is 400 m2, warehouse height = 5 meters, 5 people work in the warehouse. The volume of incoming cargo per month is on average 35 m3, and the average weight of cargo per month is 12 tons. The number of invoices per year is on average 50 thousand pieces.

The most important absolute indicator characterizing the results of the warehouse over the period is the warehouse turnover. Warehouse turnover - the volume of products sold (in value terms) for the corresponding period (month, quarter, year) from individual warehouses of the enterprise, trade and intermediary organizations, etc.

№	Income	Expenses	Percentage of income versus expense, in%.	Excess of expenditure over income
1	1 728 805	2 322 317	0,74	593 512
2	1 251 587	3 560 372	0,35	2 308 785
3	305	63 009	0,004	62 704
4	0	72 245	0	72 245
5	2 855 368	2 062 832	1,38	-792 536
6	1 098 449	1 228 488	0,89	130 039
7	649 455	1 121 915	0,57	472 460
8	0	22 207	0	22 207
9	668	43 780	0,015	43 112
10	0	63 546	0	63 546

11	0	36 929	0	36 929
12	70 560	1 987 570	0,035	1 917 010
13	179 038	1 646 282	0,108	1 467 244
14	233 489	801 211	0,29	567 722
15	2 745 844	413 338	6,64	-2 332 506
16	233 271	1 449 809	0,16	1 216 538
17	8100	60 318	0,13	52 218
18	0	45 186	0	45 186
19	1 223 974	931 843	1,31	-292 131
20	397 088	1 640 422	0,24	1 243 334
21	967 857	386 839	2,5	-581 018
22	203 543	288 912	0,7	85 369
23	63 232	1 361 511	0,046	1 298 279
24	1 888	70 699	0,026	68 811
25	0	50 873	0	50 873
26	298 030	909 857	0,32	611 827
27	2 525 963	1 041 698	2,42	-1 484 265
28	29 764	778 779	0,038	749 015
29	2 432 382	647 583	3,75	-1 784 799
30	29 875	1 473 972	0,02	1 444 097
31	1098	105 157	0,01	104 059
32		26 689 499		

Table 9 - The income and expenses of the organization for the month, in rubles.

Warehouse turnover for the month is 26,689,499 rubles.

On average, warehouse turnover for a year = 26,689,499 * 12 = 320,273,988 rubles.

The coefficient of non-uniformity K*n* of receipt (release) of goods from the warehouse is determined by the ratio of the maximum receipt (release) of cargo in tons Q*max* for a certain period of time to the average receipt (vacation) Q*av*, i.e.

$$\boldsymbol{Kn} = \frac{\boldsymbol{Qmax}}{\boldsymbol{Q\ av}}$$

The unevenness of the receipt (vacation) of goods has a great influence on the size of the acceptance (vacation) sites, the operation of hoisting and transport mechanisms.
Performance indicators of warehouse area.
This group of indicators may include:

- The utilization of warehouse space;
- The utilization of the volume of the warehouse;
- Specific average load per 1 m2 of usable area;
- Cargo intensity.

The utilization ratio of warehouse space K*ip* is the ratio of usable (cargo) area to the total area of the warehouse.

$$\boldsymbol{K_{ur} = \frac{S_{useable}}{S_{total}}}$$

$$\boldsymbol{K_{ur} = 250/400 = 0,625}$$

The utilization rate of warehouse space is 0.625 in order to increase the value of this coefficient, to the trading enterprise it is advisable to consider increasing the number of stored goods.
Warehouse volume utilization factor K v characterizing using not only the area, but also the height of the warehouse, is set by the formula

$$\boldsymbol{K_v = \frac{V_{useful}}{V_{total}}}$$

$$\boldsymbol{K_v = 1100/2000 = 0,55}$$

Where *V useable* is the useful volume determined by the product of the cargo area to the usable height (i.e. the height of racks, stacks);
V total - the total volume of the warehouse, determined by the product of the total area to the main height (i.e. the height from the floor of the warehouse to the protruding overlap parts limiting the storage of cargo).
The specific average load per 1 m 2 of usable area shows how much cargo is located simultaneously on each square meter of usable warehouse area

$$g = Z_{max}/S_{useable}$$

Where g is the specific load per 1 m 2 of usable area, t / m 2;
Z max - the amount of cargo stored at a time or the maximum stock of materials stored in the warehouse, i.e.
Freight density of 1 m 2 of the total area of the warehouse M during the year is set by the formula

$$M = Q_f/S_{total}$$

$$M = 144/400 = 0,36$$

where *Q f* is the warehouse's annual freight turnover, i.e.
In the activities of almost any company, there can be a problem area due to which the performance of the entire logistics system. Often the warehouse becomes such a problematic link, both its external and internal infrastructure. For solutions problems and optimization of the warehouse, you should disassemble in detail all a working system that can be broken down into several stages.
Stage 1. Analysis of the material flows of the company. To conduct it you need to determine the current state of material flows and formulate a forecast for the future. First of all, one should analyze: belonging of a product to a product group (type of product); stock product (in pieces), both minimum and maximum; cost stock of goods (in rubles), both minimum and maximum; pallet capacity (in pieces of goods); number of pallets (in pieces); forecast maximum growth in the volume of goods (by the number of pallets); pallet size goods; weight, height and other characteristics of the pallet.
Stage 2. Assessment of the interaction of the warehouse with other departments. Warehouse workers are in constant contact with department employees sales, marketing, logistics and service. Very often informational a gap in the chain of interaction between sales, logistics and marketing leads to the formation of different assortment matrices in each department, which further leads to double counting, excess or a shortage of products in stock. To understand if everyone is working well service, you need to do the following:

1. Interview the managers and employees of the warehouse, find out what problems and difficulties they face when interacting with related departments (IT, marketing, sales, accounting, finance and production).
2. Establish areas of responsibility of employees for the warehouse logistics for all types of inventory. You can take as a basis as follows called the Deming cycle (model of continuous improvement of processes PDCA, Plan– Do– Check– Act).
3. Assessment of the impact of each related department on the loss the productivity of the warehouse.
4. Determine the volumes and frequency of receipt of incoming, outgoing and returned goods. The numbers that should be obtained in as a result, they will tell you about the frequency, nature and total bandwidth warehouse upon receipt of goods, their processing, as well as the possibility shipment.
5. Determine the root cause of the loss of warehouse productivity and take steps to eliminate it.

Stage 3. Analysis of the warehouse itself. It is very important to evaluate the work warehouse in terms of product turnover (i.e. stock levels and occupied area). Analysis of this parameter will make it possible to understand how much the main operations are carried out quickly in the warehouse (acceptance, shipment, sorting of products). For example, the warehouse load by cells is more than 90% leads to 15% loss of productivity due to difficulties with the search for goods and a place for placing the newly arrived goods.

In addition, the lack of a clear timeline for acceptance and serving orders leads to huge losses in productivity. It is worth paying attention to a number of other points.

1. Parameters of external and internal infrastructure. So, on one the same floor level as the street made it impossible to mechanized shipment of goods (ideal is a situation when the floor of the warehouse is raised to a level from 1000 to1200 mm from the ground (street) in order to after parking the truck to the dock, the floor of the trailer was flush with the floor warehouse). Other examples: frequent grid of columns (6 × 6 m, 7 × 7 m, 10 × 10 m), broken and weak floor of the warehouse, low room height (up to 5 m) complicate the rational placement of rack equipment and optimization of the internal space of the warehouse. Poorly planned lighting, ventilation, heating and air conditioning systems of the warehouse so also lead to performance losses.

2. Identification systems: inscription, barcode, radio frequency identifier (RFID). The lack of a pallet identification system can lead to frequent problems with product returns, errors in the formation of orders, as well as the expiration of the shelf life of products. If the division of labor is not applied and special

1. devices for marking, demarcating, identification and packaging products, this also slows down the work of the warehouse.
2. Useful use of space. Many illiquid assets appear if the accounting system and work with returns and claims, as well as if there is no product rotation in the warehouse (usable products age and become illiquid). The warehouse must have
3. certain areas for storing each type of product. About the mess often says non-compliance with the principles of its storage in a fixed zone, and the absence of a system of visual identification of goods (this leads to more than 25 percent loss in overall warehouse productivity). One of the systems used in practice is as follows: green is a proven and good product; yellow - undefined status; red - marriage.
4. Work of mechanisms and equipment. There is a known case when the company's warehouse occupied more than 80% of the shelving cells. Due to the increase the flow of goods, the company's management was recommended to switch to narrow-aisle technology (use of specialized equipment with minimum distance between shelves), purchase front racks, repurpose existing equipment (electric forklift was transferred from the storage area to the shipping area). Reconstructed the ramp, rearranged racks and increased the number of shipping posts for small-tonnage transport. As a result, the warehouse was placed in twice as many goods, increase the speed of shipment and the number of shipped orders four times.

The following problems in the work of the warehouse can be distinguished, based on analysis done:

1) Uneven supply. From this problem follow the following negative consequences:
   - on some days the intensity of work is very high, and on some days of idle labor due to lack of work;
   - since it is constantly required to place goods of different types, logistics becomes more complicated.
2) Warehouse premises are used irrationally. From this problem have the following negative consequences:
   - the time for the implementation of shipments increases;
   - time for distribution of products increases;

- a higher level of load on labor resources;
- irrational use of technical equipment.

3) Insufficient base of theoretical material regarding warehouse management.
4) Lack of development of warehouse activities in the organization.

Solution of the current problems promotes increase the productivity of the warehouse, and as a result of the increase in work the organization. To solve all these problems, you should constructively approach the search for warehouse optimization methods and further implementation.

II. ANALYSIS

3 IMPROVING THE ORGANIZATION OF WAREHOUSING IN ORGANIZATIONS OF LLC "L'ETUAL"

3.1 Methodological approaches to optimizing technological warehouse processes

Placement of products for storage should be done in such a way so that the number of movements of warehouse employees was minimal in subsequent technological operations. For storage goods are distinguished by "hot" and "cold" warehouse zones, for this purpose divide all headings into three groups. To be optimal divide the entire nomenclature, you will need to use techniques ABC and XYZ analysis. In this case, that is, in relation to technological process, the main aspect of dividing commodity items into group will be the number of approaches to move warehouse workers when performing technological operations, in particular when the procedure for picking orders for customers or for production.

To conduct an ABC or XYZ analysis, you will need to collect statistical data, mostly not less than for the previous year. After the statistical base is compiled, the entire product range according to ABC analysis, they are divided into three categories. The division is made in classical proportions: group A - 20%, group B - 30%, group C - 50%. In this case, the division criterion is the share in gross profit.

An example of the division of commodity items by ABC analysis is shown in table 10.

Product group name	Group number	Share in gross profit, in %	Group
Wella	1	40	A
Londa	2	19	B
Schwarzkopf	3	11	B
Kapous	5	6	C
Equipment	7	6	C
Indola	4	5	C
Manicure	9	4	C
Cosmetology	10	4	C
Accessories	8	3	C

Tanning	6	2	C

Table 10 - ABC-analysis of product groups of LLC "L'etual"

Thus, group A included about 20% of commodity items (Kapous product group), which were found in orders most often, in group B included about 30% of commodity items, which are a little less common, the main part is occupied by goods of group C.
Consider the XYZ analysis technique, the division criterion in which will be number shipped universal units.
Proportional division is similar to the ratio during ABC- analysis, ie 20/30/50. An example of division of commodity items by XYZ-analysis are given in Table 11.

Product group name	Group number	Number of orders in %	Group
Kapous	5	34	X
Londa	2	19	Y
Wella	1	14	Y
Accessories	8	9	Y
Schwarzkopf	3	9	Z
Manicure	9	5	Z
Cosmetology	10	4	Z
Indola	4	2	Z
Tanning	6	2	Z
Equipment	7	2	Z

Table 11 - XYZ-analysis of product groups of LLC "L'etual"

It is necessary to combine the results of ABC- and XYZ-analysis, as a result, the entire range of the warehouse is divided into 9 segments based on two criteria -the share of the product group in the organization's turnover and the share product group in the profit of the organization. For this we will use Microsoft Excel program, in which we will perform work using functions concatenate as shown in Figure 4.

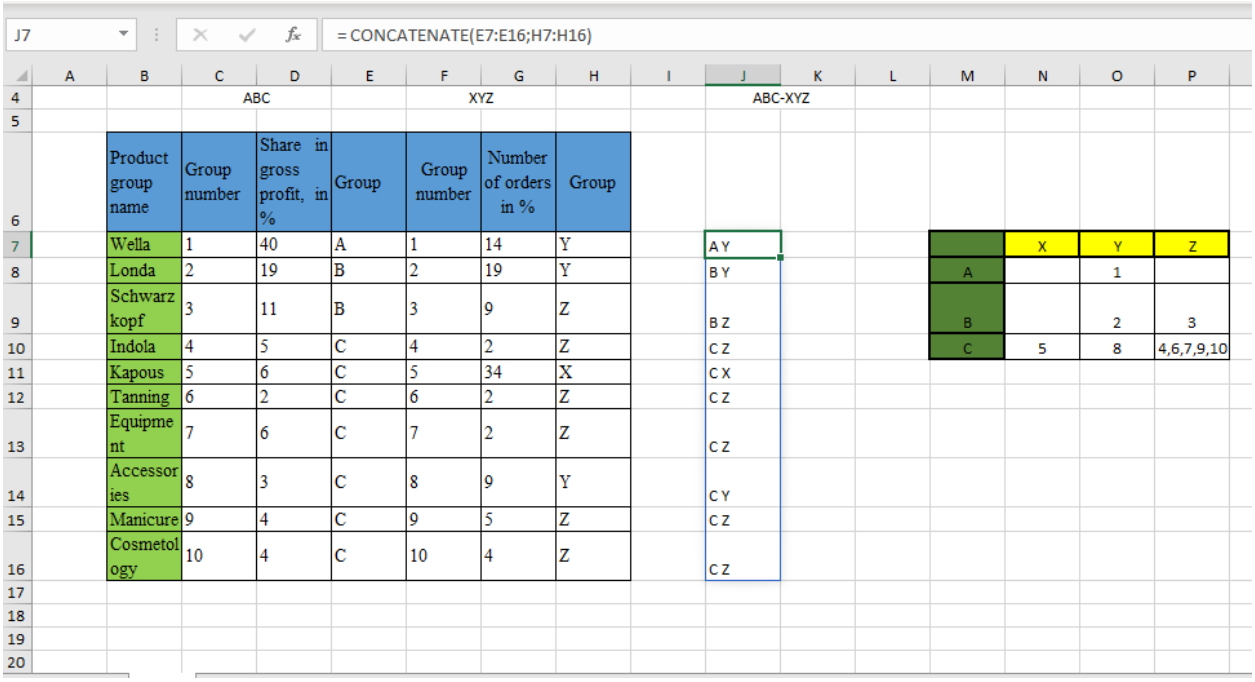

Figure 2 - ABC-XYZ analysis

The results of the combined analysis obtained during the study product groups are presented in table 12.

Matrix of results of ABC and XYZ analysis			
	A	B	C
X		Kapous	
Y	Wella	Londa	
Z		Schwarzkopf	Indola Manicure Cosmetology Accessories Tanning

Table 12 - Results of ABC and XYZ analysis

Thus, after placing all positions according to the corresponding categories, we can conclude that the "hot" storage area will positions located in squares AX, AY, BX are

assigned to the "middle" zone storage - positions located in squares AZ, BY, CX and to the "cold" storage area - positions located in squares BZ, CZ, CY.

The results of the matrix show that there are many product groups organizations are unclaimed consumers and therefore occupy an insignificant share of the entire turnover of the organization. To the group of the most expensive goods, of which there is a significant share the organization's profits, based on the analysis, relate to Wella. To the group the best-selling product is referred to as Kapous, this is due to its availability to buyers.

After ABC-, XYZ-analysis for each commodity item calculate the stock rate in the warehouse at a time. Further determine the number of storage locations for each heading and produce placement based on analysis results. The hot zone is usually located closer to the shipping area, on racks located in the central aisle, in the lower tiers of racks, which allows significantly reduce the time for performing technological operations.

The ABC and XYZ analysis performed will allow several times reduce the number of movements around the warehouse, which will reduce labor costs

and time to collect orders.

Consider a warehouse plan with a total area of 400 m 2, presented in Figure 5.

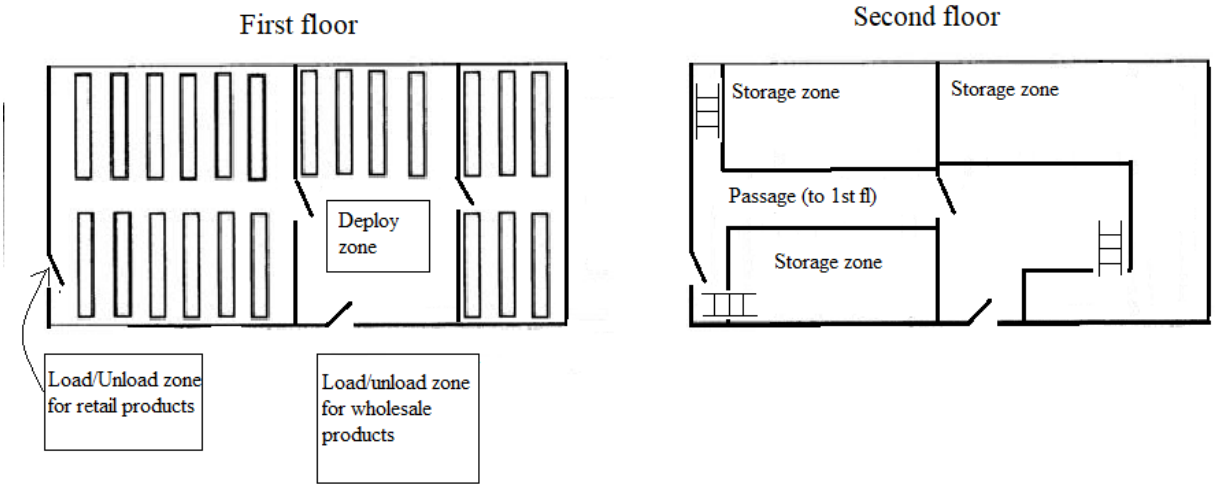

Figure 3 - Warehouse plan

Let's analyze in detail all the zones of this warehouse.

1. Area of unloading of goods. This is where the primary unpacking takes place goods. In this case, the products come to the warehouse on pallets, for unloading of which there is no necessary equipment, the same area unloading takes place through an ordinary medium-sized front door. These two factors indicate that unloading is done manually by workers warehouse and takes quite a long time. To shorten the time unloading, it is necessary to purchase loading and unloading machines and make the required size of the door for ease of use such machines.
2. Reception area expeditions. Responsible procedure, revealing shortages, damage, low quality or incompleteness goods. On this site, the characteristics of the goods are checked, entering data into accounting systems, labeling individual warehouse units. At the warehouse in question, goods arrive in a small quantity relative to industrial warehouses and food warehouses and shops. But the quantity of goods and their variety is very large, and reaches approximately 12-13 thousand units, the whole process of goods acceptance is done manually by warehouse workers. In this case, the area of acceptance of goods is approximately 30 m 2, which is very small for a warehouse with such an area. For increasing the speed of processing goods at this stage is recommended increase the acceptance area and introduce a bar-coding system goods. The introduction of barcoding at the finished goods warehouse will allow automate the processes of acceptance of goods at the warehouse, revision of warehouses, i.e. all standard warehouse operations are automated to reduce the influence of the human factor and labor costs on routine warehouse operations.
3. Zone for placing goods. Racks and racks are installed here for the goods, create the necessary microclimate. To optimize this area warehouse, you can apply the ABC - XYZ system analysis, which was considered earlier in the work.
4. Driveways and passages. They are included in the general storage area of goods and make up about 40% of the entire storage area.
5. Area of picking and control (shipping expedition). On the this section is checked for compliance with the prepared for shipment products to shipping documents. It also produces complete set of goods for individual orders. In the considered warehouse as such, there is no shipping area for retail orders.
6. For forwarders orders are placed near the main exit / warehouse entrance (shown in Figure 5), for this 3 tables are allocated, near which there are already order picking takes

place, and route sheets are drawn up. This zone is located unsuccessfully in the warehouse, because storekeepers constantly use this outlet, serving customers, while interfering work of forwarders. Another problem is the large number of orders that need to be sent to forwarders, sometimes orders are very a lot and in the absence of space, storekeepers have to draw up orders for floor. To solve these problems, it is necessary to equip a separate area for freight forwarders, where employees of the organization of different departments will not be friends interfere with your friend's work.

7. Packaging area. Usually under the product packaging process a small area is allocated. Product specificity may not imply the presence of this site. There is no such zone in this warehouse.

As a conclusion, we can say that the warehouse of this organization needs reorganization and modernization of the entire system to increase performance. It is necessary to properly reorganize the warehouse areas to convenience and increase the speed of work, as well as introduce the system barcoding or similar system to enlarge productivity.
Expansion of the gate and purchase of loading and unloading equipment will simplify the work of storekeepers, which will allow faster capitalize goods and sell them to customers.
Conducting ABC - XYZ analysis will allow you to get the tools management, control and planning of the entire supply system material resources. The combination of these analyzes makes it possibly get more information about the materials that used in the organization.

3.2 Development of measures to improve the organization warehouse operations at LLC "L'etual"

Loads that arrive at the warehouse are subject to many operations such as loading, unloading, intra-warehouse movement cargo, warehousing, sorting, cargo identification, equipment, packaging, labeling, etc. These operations are integral parts warehouse technological process and wear name "Cargo handling".
Cargo handling is a set of operations performed on various stages of the warehouse technological process.
Cargo handling operations are carried out within the warehouse technological process. This process is divided into four main stage:

- receipt of goods (composition of logistics operations performed upon receipt of goods, may vary greatly depending on the kind incoming cargo);
- acceptance of goods in terms of quantity and quality;

- warehousing and storage of goods (carried out in the form stack or rack storage);
- release of goods from the warehouse (selection of goods from storage locations, picking in batches, freight forwarding, loading of transport facilities).

The operations carried out at the above stages are the basis of warehouse activities, and the effective implementation of these operations is a key factor in warehouse productivity. Therefore, the question of improving both individual cargo handling operations and the functioning of the whole warehouse.

The analysis made it possible to systematize all the found ways to optimize warehouse activities and highlight two areas optimization:

1) the first direction is logistics technologies, which aimed at optimizing specific operations in warehouse activities (e.g. product identification, placement of incoming products, shipment of products);

2) the second is logistics technologies that optimize the activities of the warehouse in general, presented in table 13.

Optimization of individual cargo handling operations	Optimization of individual cargo handling operations
Barcoding, RFID	WMS
Barcoding, RFID	
ABC-XYZ Analysis	

Table 13 - Logistic technologies for optimization of cargo handling

Using such a grouping, one can single out those logistic technology, which relevant, if a company plans minor changes in their warehouse activities, and those that require radical changes from the enterprise, and therefore financial costs.

Let's consider the proposed logistics technologies in more detail and denote the positive effects of their use:

1) the introduction of bar coding in the warehouse makes it easier and faster product identification process. This technology will significantly increase the speed of the goods acceptance process (if the incoming cargo units already have a barcode), simplify the search the desired product on the rack, and significantly reduce the risk "Human error" during the inventory and in the process performing technological operations. In addition, the introduction of barcode coding is justified by the fact that more and more large clients

manufacturing companies require a prerequisite for purchasing goods availability of a barcode.

2) Cross-docking is a technology and the process of shipment and acceptance products and cargo directly through the warehouse, without long-term storage and placement in a warehouse. With the classic cross-docking model, direct reloading from one vehicle to another (sometimes accompanied by simultaneous re-staffing, re-stuffing, also some other possible operations with products and cargo). Thus, cross-docking allows a significant reduction in costs of storage of products and goods, downtime and empty transport run, etc.

There are a wide variety of needs and reasons that cause the need for cross-docking, but always dictated by the situation when it is necessary to quickly speed up the procedure receiving cargo or goods, ordered volumes and configurations buyers:

- repacking of the container with its subsequent transportation already from changed product content;
- picking goods into sets from a variety of shipping sources or places;
- direct reloading of products from one vehicle, destination of which is a cross-docking site, to another vehicle ending at another warehouse or consumers, or cross-docking midpoint.

3) ABC-XYZ analysis, which has already been described earlier in the work.

4) warehouse automation using a warehouse management system WMS (Warehouse Management System) can significantly reduce the number of errors, reduce the cost of operations and their time performance, increase staff productivity, improve quality of customer service, reduce the costs of storing goods, i.e. carry out warehouse management extremely efficiently.

The principle of operation of this system is that the territory the warehouse is divided into zones according to the types of technological operations in order to automation of procedures: storage, placement, acceptance, processing and shipment of products. This will streamline the work of personnel at different areas and effectively separate areas of responsibility.

At the first stage of implementation, a description is entered into the system physical characteristics of the warehouse, parameters of all used equipment, loading equipment and rules for working with them. All incoming goods are marked with barcodes. Carrying out technological warehouse operations under the control of the system are carried out on based on the data of storage locations, loading equipment and barcodes.

Loading equipment and warehouse workers are equipped with radio terminals data input-output, which is a laptop, communicating with the main server of the system over the radio channel. System capable of printing internal barcode labels and applying any of the existing code types.

The system takes into account all the requirements for storage conditions when distribution of storage locations for goods arriving at the warehouse. For example, temperature conditions, humidity, shelf life, terms can be taken into account implementations, manufacturers, suppliers, compatibility rules and all sorts of other parameters. The WMS system automatically generates tasks for warehouse workers, and also selects storage locations for accepted goods. Tasks are individually received for each employee on the screen of radio terminals in the form of elementary step-by-step commands. After analyzing the considered logistics technologies, you can build a table that will present benefits as well as operations, which they optimize (Table 14).

Logistic technologies for improving cargo handling. Optimization of individual warehouse operations	Cargo handling operations	Benefits provided
Barcoding, RFID	Identification of goods	Control of cargo movement, reduction of time for information processing, which entails a reduction in costs.
Cross-docking implementation	Moving from the receiving area to the shipping area	Significant reduction of costs for warehousing of goods and cargo, downtime and empty transport; acceleration of the process of sending goods (however, its application is possible only under certain conditions).

Application of ABC-XYZ Analysis	Warehousing and storage of goods	Minimizing the movement of warehouse employees (reducing the time to move goods from the storage area to the picking and shipping area, which in turn reduces logistics costs).
Implementation of WMS (warehouse management system)	All operations	High turnover of the warehouse, quick assembly of consignments of goods, their shipment to consumers.

Table 14 - Analysis of logistics technologies for improvement warehouse activities

Based on the analysis results, it can be concluded that development in the direction of improving the processes of cargo handling are produced. However, it should be noted that the implementation of the proposed logistics technologies require significant costs (especially this concerns areas such as the introduction of bar coding, implementation of a warehouse management system WMS), which are domestic businesses cannot afford. Therefore, the actual is the question of the development and implementation of economical logistics technologies improving warehouse operations that will resonate with domestic manufacturers.

CONCLUSION

Warehouses are a variety of premises where contains goods, and various devices specially designed for their acceptance, placement and storage. Warehouse is good today regulated multi-level organization, united into a single technological process with automated accounting systems stored stocks, starting from their acceptance and ending with issue to the end consumer.

The logistics functions of warehouses are implemented in the process implementation of individual logistics operations. Functions of different warehouses may differ significantly from each other. Accordingly, there will be the complexes of warehouse operations performed are also different. In wide the ways of performing homogeneous operations also vary within limits.

Analysis of the financial and economic structure of the organization speaks about the fact that the organization is financially stable and provided with its own funds, profit and net proceeds are growing every year. Should pay attention to the indicators of the cost of production, since this trade organization, and the essence of the activity is to resell products, you need to be careful with the increase in prices for goods, take into account customer profitability and general inflation in the country. In this release, skilled work have been developed recommendations for improving warehouse management L'etual LLC.

Having considered the analysis of the warehouse management of L'etual, several issues were identified:

1. Inappropriate use of storage space.

2. Uneven supply.

3. Insufficient base of theoretical material regarding warehouse management.

In order to solve these problems, the following measures have been proposed:

1.the purchase of loading and unloading machines, the need for increasing the space for loading and unloading operations;

2.increase in the area of acceptance of goods and implementation of the system barcoding of goods;

3. the need for the distribution of storage areas;

4.Proposed Scor program aimed at optimization supply process;

5.conducting ABC-XYZ analysis of all products of the organization, and redistribute groups of goods depending on the nature of demand and its cost;

6. Development of the organization according to such a commodity management scheme stocks, which would most fully take into account market fluctuations consumer demand and supplier supply.

These measures lead to the following improvements in performance warehouse facilities:

1) simplification of work and increase in productivity thanks to introduction of equipment and systems for working with goods;

2) an increase in the speed of picking orders due to redistribution goods in the course of ABC-XYZ analysis;

3) cost reduction due to more efficient use labor and technical resources;

4) increasing the speed of acceptance and shipment of materials from the warehouse thanks to the product barcoding system.

Thus, an increase in the efficiency of the work of all mechanisms that make up the warehouse, which in aggregate determine the activities of the entire warehouse, as well as the entire enterprise as a whole.

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LIST OF ABBREVIATIONS

LLC Limited Liability Company – A limited liability company (LLC) is a business structure whereby the owners are not personally liable for the company's debts or liabilities.

WMS Warehouse Management System – A warehouse management system (WMS) is a software application designed to support and optimize warehouse functionality and distribution center management.

RFID Radio-frequency identification – Radio-frequency identification uses electromagnetic fields to automatically identify and track tags attached to objects.

LIST OF FIGURES

LIST OF TABLES