

## INTELLIGENT RESOURCE ASYMMETRIES IN THE LOGISTICS MANAGEMENT OF WAREHOUSING IN THE ENTERPRISE

**Mykhailo Sahaidak**

Associate Professor, DSc,

Kyiv National Economic University named after Vadym Hetman,  
e-mail: michael\_p\_s@ukr.net, orcid.org/0000-0001-6526-1170, Ukraine

**Marina Zavyalova**

Associate Professor, PhD, Kryvyi Rih Economic Institute  
of Kyiv National Economic University named after Vadym Hetman,  
e-mail: marina.1963@ukr.net, orcid.org/0000-0002-1880-714X, Ukraine

**Mariia Tepluk**

Assistant, PhD, Kyiv National Economic University named after Vadym Hetman,  
e-mail: mteplyuk@gmail.com, orcid.org/0000-0001-6823-336X, Ukraine

**Abstract.** The article analyzes the theoretical and methodological foundations of enterprise resource management, namely: the relationship between the economic essence of the category “resources” and such concepts as intellectual resources, intellectual potential, intellectual support and intellectual resource asymmetries are investigated. This allowed to actualize the issues of improving logistics warehouse management in the enterprise in the context of resource theory. The results of the analysis of the main obstacles in ensuring of increase in the efficiency of functioning of the modern warehouse complex of the enterprise allowed to identify existing resource asymmetries, which suggested to be identified as disproportions of unique resource combinations, which contribute to the formation of stable competitive advantages of the company in the market at a certain time. The sequence of stages is proposed and substantiated, and the criteria of warehousing optimization for the enterprise. A set of measures aimed at improving of the approaches to warehouse business management with the definition of areas of responsibility of employees involved in logistics processes has been developed.

**Keywords:** resources of the enterprise, intellectual potential, intellectual resources, resource asymmetries, personnel, logistics management, warehouse management, competitive advantages.

*DOI: <http://dx.doi.org/10.23856/2905>*

### Introduction

Nowadays, the problem of enrichment of enterprises the necessary resources without using of natural resources and raw materials is becoming especially relevant. It is without a surprise that the theory of intellectual capital was being formed and developed in the second half of the 20<sup>th</sup> century. The society moves to the next step in developing economic knowledge due to innovations which are based on the information with developed infrastructure. Intellectual capital is a complex of intellectual resources of people, enterprises and organizations (knowledge, skills and creativity of individuals, their educational qualifications, objects of intellectual property, artificial intelligence, and organizational

structures), which were formed as a result of previous creative human activity and are being used by subjects of entrepreneurship for reaching their goals.

Scientific researches dedicated to an array of problems in the study of intellectual capital include the works of particular domestic scientists such as: J. Andersen, O. Butnyk-Siversky, M. Gogan-Luminita, P. Gugler, L. Edwinston, V. Dikan, O. Nikolaichuk, I. Kotane, M. Klos, M. Sahaidak, M. Tepluk, D. Terpstra, M. Zavyalova and others. The purpose of the study is to deepen the theoretical positions regarding the management of intellectual resource asymmetries in ensuring the stable competitive advantages of the enterprise in the market.

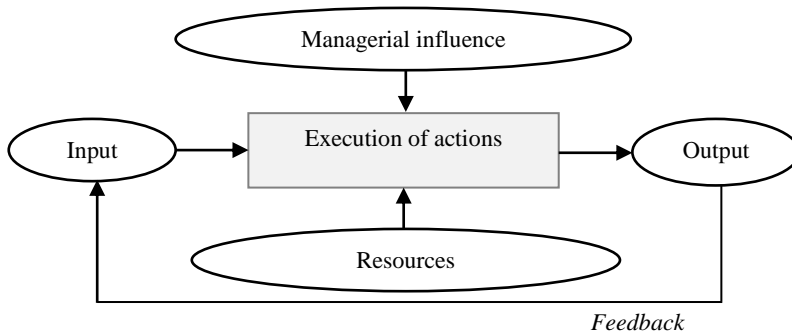
Leading academics such as T. Stewart, L. Edwinston, M. Melon, who proposed the definition, structure and methods for evaluating the intellectual capital of the enterprise, were engaged in the study of this problem and the formation of theoretical foundations of intellectual capital (*Xiang, Bo, 2010*). Their scientific achievements became the basis for many modern developments and now are considered to be the axioms of the theory of intellectual capital. Development of the modern business environment relies heavily upon the structure of available resources, i.e. its intellectual and material components that are crucial for entrepreneurship. The importance of the research subject can be justified, taking into account considerably high resource intensity, inherent for economic activities of Ukrainian industry, lack of stable resource supply chains, efficient policies to rationalize the use of resources, programs to identify the structure of the resources available, and the regulatory standards, that shape how the economic activities of business entities develop. Here is a number of reasons to justify the actual necessity to develop a complex approach towards the creation of an innovative resource efficiency model: disproportion of dualistic resource peculiarities, barriers in resource leverage, specifics in evaluating the influence that each element of the resources available exercise upon the market economy actors performance.

### **The key research theses supported by the full reasoning of the obtained results**

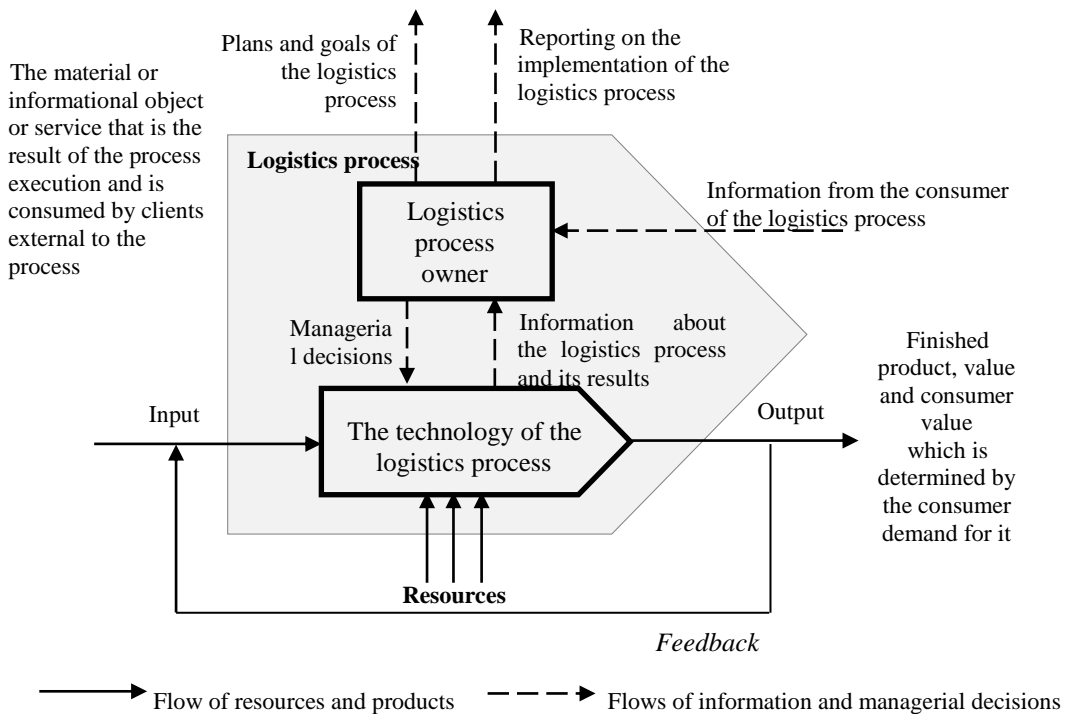
In today's conditions of functioning and dynamic development, business environment is characterized by the involvement of traditional and intellectual resources that are the basis for entrepreneurial activity. Ensuring economic stability and competitiveness of the company in the market, directly related to the effectiveness of the use of elements of the resource portfolio. The problem that society encountered in the 20th century is limited resources and the need for their rational use, which prompted the rapid development of scientific thought about the efficient use of resources.

Systematically organized actions using resources to transform what comes to the "input", and ultimately to "output", is understood in the international standard ISO 9000:2000 as a process (*Mizhnarodni standarti ISO 9000:2000*). Consequently, in the broad sense process is a stable, focused set of interrelated types of activity, which, according to a certain technology, transforms resources into components of consumer value (Fig. 1).

The result of the effective management of the process is that each of its participants clearly represents the task assigned to it, knows its role and place and effectively performs certain actions that allow it to achieve its goal. For this approach management of the enterprise allows to effectively optimize and manage the influence on resources, and at the output to get the desired result (*Dikan, 2009*). Based on the general understanding of the concept of "process", the logistic process has its "inputs" and "outputs" (Fig. 2).



**Fig. 1. Schematic representation of process management at the enterprise**  
 Source: formed by authors



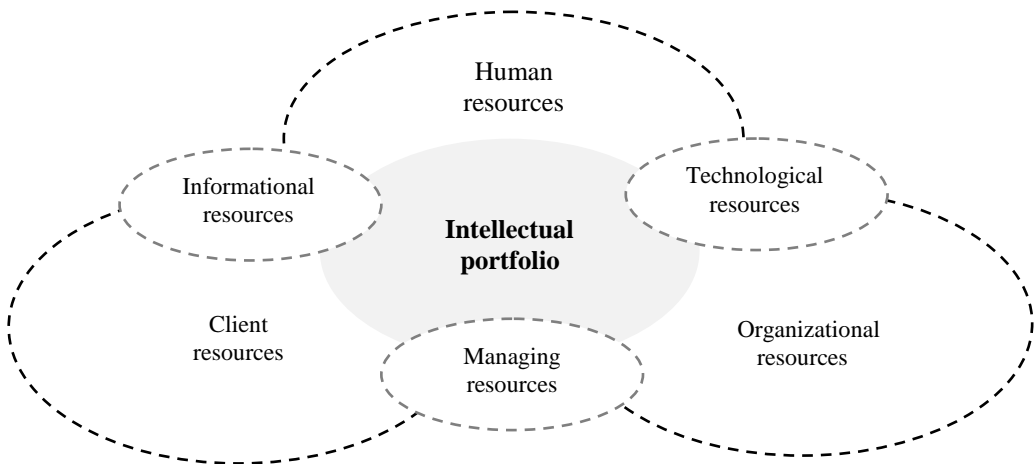
**Fig. 2. Conceptual scheme of the logistics process at the enterprise**  
 Source: formed by V. Dikan (Dikan, 2009)

Focusing on the logistics management of warehousing in the enterprise, we note that a competent approach to describing processes and understanding the significance of warehouse complex management problems largely determine the effect of further modernizing the technology of the work of the company's warehouse. The main obstacles to increasing the efficiency of the warehouse complex of the enterprise can be: organizational (functions,

powers, areas of responsibility); technological (sequence of operations, methods and algorithms); information (information systems of accounting and data processing, means of communication); technical (availability of equipment and equipment, degree of wear of resources, compliance with requirements). The main purpose in the strategic development of the enterprise is the achievement of competitive advantages through the search for innovative methods of identification and evaluation of the efficiency of the use of resources with determination of their importance.

The intellectual resources, as the components of achievement of competitiveness in the market, are worth the most attention among the classification elements of the resource tree. Many scholars identifying the notion of “intellectual resources” and “intellectual capital” as a scientific direction, and its researching started recently - from the 90s of the twentieth century. Note that the logistics process resources are human, material, intangible and other types of resources that are constantly used to perform such a process, but are not its “input”. Relevance of researching the problem caused by the ambiguity and contradictory opinion of the researchers regarding the determination of the essence and structure of the intellectual portfolio. It should be noted that considering the resource components from the perspective of innovation development, the intellectual component itself is the most important in this aspect.

First of all, it concerns the products of intellectual activity, intangible assets, which are expressed in the forms of individualized objective knowledge and human capital, that are forming a set of elements of the intellectual nature. The concept of “intellectual resources”, in our opinion, can be interpreted as specific knowledge, unique experience, competencies, dynamic abilities, and capabilities and progressive information channels that are formed by the company and used to create the value for all stakeholders (Fig. 3).



**Fig. 3. The components of the enterprise's intellectual portfolio**

Source: formed by authors

There are three main components of intellectual resources in the economic literature, namely:

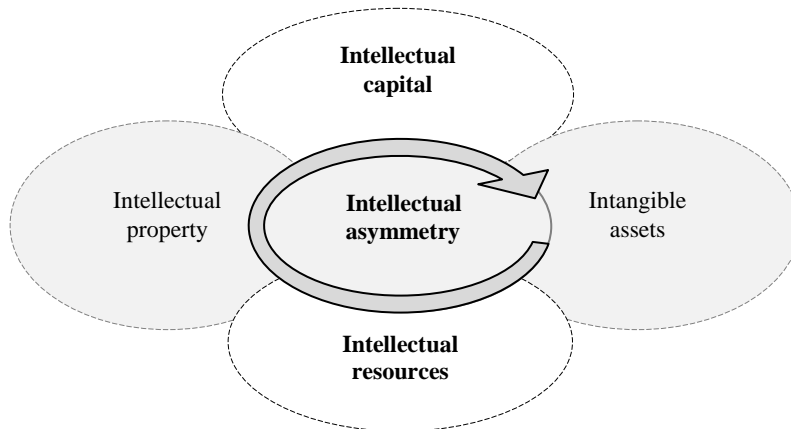
- Human - a set of knowledge, skills, creativity, experience and ability of employees to meet the requirements and strategic goals of the company;

- Organizational - software tools of electronic computing machines, databases, organizational structure, patents, trademarks, as well as mechanisms for ensuring productivity and operation of the company;

- Clients - relationships with consumers, partners, suppliers, trade unions, authorities and other contractors operating in the business environment, in particular: economic, social and political (*Andersen, 2010*).

As a separate component, we consider it relevant to highlight managerial, technological and informational issues. We suggest that technological issues can be characterized as a set of knowledge, skills and experience associated with the formation of unique technological features based on the symbiosis of innovation development and production technologies.

In economic science and psychological studies, there are many controversial views on managing resources as the networking ability of senior management to find the optimal way to achieve the goals, as well as to stimulate the innovative development of the enterprise (*Gogan-Luminita, Artene, Sarca, Draghici, 2016*). The founder of modern management P. Drucker, in his book “Effective Manager”, suggests that a talented specialist, a genius in his field, rarely becomes an effective manager. He believes that management is a specific activity, a career that can and must be learned. It is psychologically closely related to a feature of character as competence. The information resources must be understood as organizational capacity and entrepreneurial skills to transform dynamic capabilities. The majority of scholars believe that intellectual capital is a combination of labour, intellectual resources and intellectual products of the enterprise (Fig. 4). Intellectual resources are a set of scientific-productive, financial, marketing, organizational and managerial, information, legal ideas, tools, technologies, obtained as a result of intellectual work. To determine the essence of the category of “intellectual resources” it is necessary to establish its relationship with other categories.



**Fig. 4. Interconnection of intellectual components in the context of a modern resource approach**

Source: formed by authors

As for the terms “intellectual capital” and “intellectual resources” commonly they are: firstly, directly based on products of intellectual activity; Secondly, they are used as a factor

in improving the efficiency of activities based on the increase in added value and the increase in market prices; Thirdly, they may belong to the personnel, the enterprise and the external environment; fourthly, the dynamic growth of the enterprise economy through intellectual products is inherent in innovation-oriented companies (*Shvidanenko, Tepliuk, Budiaiev, 2017*). It is evident that the resources that create innovative intellectual products to secure the company's competitive advantages become its intellectual resources.

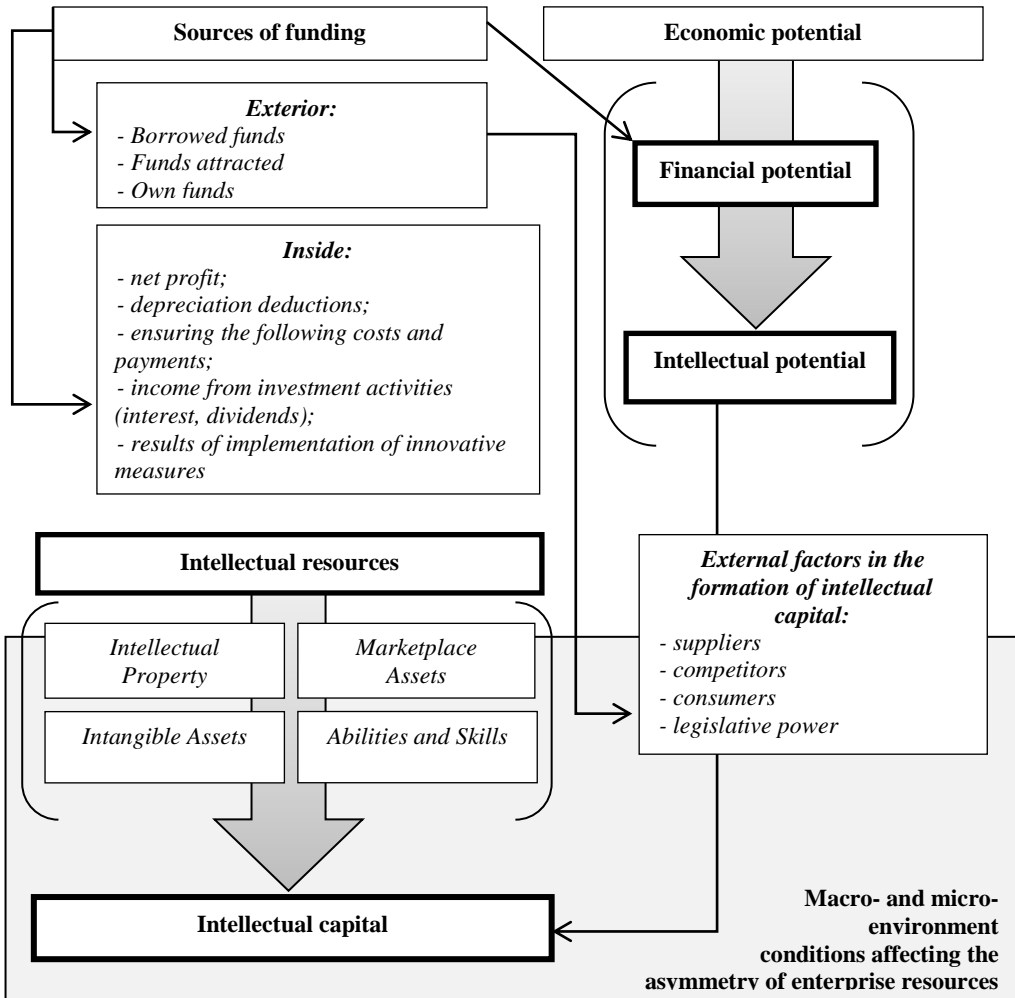
Intellectual resources in combination with material resources are crucial for ensuring the competitive advantages of enterprises in the long run due to their unique properties. Therefore, one of the most profitable activity directions of developed countries is the export of knowledge in the form of technologies, software, inventions and other intellectual products. Nowadays, the concept of resource asymmetry becomes relevant. A main feature is the fact that the possession of resources and opportunities for their use and reproduction is not a prerequisite for the success of the enterprise; it is important to invent the resources that none of the competitors have, that is, asymmetry, and they are only able to provide a stable competitive advantage on the basis of highly effective activity of the enterprise.

Therefore, resource asymmetries are rare competitive assets (company assets, abilities, skills, organizational processes, knowledge, distinctive characteristics of the company) that are not owned by other companies and can't be copied even with the correct allocation of costs. Certainly, resource asymmetries must be combined with different strategies of enterprises. Then the resource approach will act as a key driver for the development of the business entity, and resource asymmetry - as a way of its implementation. At the same time, competitive advantage can be created by combining all three types of M. Porter's competitive strategies with resource asymmetries, but each of these strategies will be implemented at a certain stage of implementation in the production of innovation (*Hamel, 2000*). Thus, intellectual resources are being involved in economic turnover as the most important factor of production, and their effective use creates a powerful potential source of competitive advantage.

Intellectual resource asymmetries play a leading role in shaping the strategic direction of the enterprise. Because of the great competition on the market, it is necessary to study their competitors in detail and make conclusions about the introduction of the product not only from the position of its company, but also from the standpoint of its competitors. The peculiarities of the formation of intellectual capital of the enterprise are devoted to the scientific works of many domestic researchers: Yu. Kanigin, V. Kutsenko, B. Malitsky, V. Proshak and others. Intellectual capital should be distinguished from such a widespread concept in the Ukrainian scientific literature as "intellectual potential" (*Radko, Matsyura, Nikolaichuk, Viskers, 2017*) Intellectual potential is a set of knowledge, skills and creative talents of individuals, their educational and qualification level, which enable to absorb the acquired knowledge, and create new concepts, that is, it is mostly the capabilities that a person owns. Let us show schematically that intellectual potential is the main factor in the formation of intellectual capital at a specific time (Fig. 5).

Consequently, in the context of logistic warehouse management at an enterprise, the problem of intellectual resource asymmetries becomes particularly relevant. In our opinion, the resource asymmetries should be understood as disproportions of unique resource combinations, which contribute to the formation of sustainable competitive advantages of the enterprise in the sectoral market over a period of time. The key resources that can provide competitive advantages to an enterprise, apart from material assets (enterprise assets and other distinctive characteristics), are intellectual (skills, knowledge and abilities of personnel,

organizational processes, etc.) that aren't owned by other enterprises and which can't be copied even with the correct allocation of costs.



**Fig. 5. Model of transformation of intellectual resources into intellectual capital**

Source: formed by authors

Intelligent resource asymmetries, in our opinion, allow the use of turbulent environments to create unique resource combinations that will contribute to the formation of sustainable competitive advantage enterprise. Gets the question of how to transform resource asymmetry into a unique competitive advantage? In our opinion, the answer to this question is in the area of resource provision of the economic activity of the enterprise, which allows to effectively use dynamic opportunities, to create innovative combinations depending on the importance and importance of the elements of the resource portfolio and to meet the strategic goals of the enterprise.

In particular, Yu. Kanigin considers intellectual potential as a component of social intelligence in the context of the general socialization of society. V. Kutsenko, V. Udovichenko, I. Opaleva, the concept of “intellectual potential” is mostly identified with the notions of “educational potential” and “human capital”. V. Oriishchenko adheres to this concept (*Gugler, 2017*). According to the scientist, “intellectual potential” is the spiritual and educational status of the nation, which ensures the ability of the people to fulfill the actual socio-economic tasks, creating necessary conditions for the comprehensive development of the younger generation based on the highest spiritual values of the nation. In particular, I. Guseva, considers intellectual potential as a component of social intelligence in the context of the general socialization of society (*Terpstra, Limpaphayom, 2012*).

Therefore, intellectual capital should be distinguished from such a widespread concept in the Ukrainian scientific literature as “intellectual potential”. Intellectual potential is a set of knowledge, skills and creative talents of individuals, their educational and qualification level, which enable to absorb the acquired and create new knowledge, that is, it is mostly the capabilities that a person owns.

In our opinion, the efficiency of logistics warehouse management in an enterprise depends, firstly, on the effective use of material and intellectual resources, and secondly, on the improvement of warehouse technologies. It should be noted that the process of warehouse optimization should be substantiated and consist of several successive stages: the study of technological processes (logistics expertise), the development of volumetric and planning solutions and the design of the work technology of the warehouse, the preparation of the composition for the implementation of changes and the actual implementation. Equally important in ensuring efficient warehousing management is the communication between all related services and the coordination of their activities (*Sahaidak, Zavyalova, Kotane, 2017*). This allows for rapid adaptation of the conditions of operation of the warehouse to changes in demand. It is demand that should become the main one when choosing the methodology of the process of creating an accurate description of the control system. It should also be emphasized that in the organization of the storage system and the calculation of its parameters, the crucial role should be given to the correct and reasonable choice of optimization criteria. We propose the optimization criteria to be divided into five groups:

- 1) The quality of warehouse service and customer satisfaction (evaluation: the level of order fulfillment precisely at the specified time, accuracy of the parameters of the order, errors in the execution of the order, the degree of customer satisfaction with the service, the number of claims, etc.);

- 2) Use of warehouse capacities and areas (assessment of the average stock level in stock, efficiency of working capital use, speed and quantity of turnover of stocks, etc.);

- 3) Logistic costs (estimation of expenses for management of warehouse stocks, for internal warehouse transportation, for warehouse cargo processing and storage, etc.);

- 4) Time of logistics cycles (estimation of time spent on replenishment of stocks, processing of orders of consumers, preparation and completion of orders, delivery of orders, preparation of reports, etc.);

- 5) Productivity (estimation of the number of processed orders per unit of time, freight shipments per unit of storage capacity and capacity of vehicles, cargo handling operations on time, general logistics costs per unit of invested capital stock and total logistics costs per unit of warehouse turnover) (*Kaverina, 2008*).

The proposed system of criteria can be supplemented depending on the objectives of logistics warehouse management at the enterprise. The generalization of the obtained results



allows us to improve approaches to doing business by defining the areas of responsibility of employees involved in logistics processes in the warehouse enterprises (Fig. 6).

Actual situation	Area of Responsibility	The situation after optimization	Area of Responsibility
Forecasting demand	Sales manager	Regulation of demand for warehouse space	Sales manager
Customer service	Storekeeper, Economist, Accountant	Customer relations	Sales manager
Keeping records on admission/ transportation of cargo	Storekeeper, Accountant	Production flow in warehouse	Head of the warehouse
Processing the order	Economist	Procurement	Procurement specialist
Packaging	Sorter	Cargo handling, dismantling and sets formation	Loader-fitter
Formation of cargo	Sorter	Warehousing, storage, barcoding	Loader-fitter

**Fig. 6. Changing the approach to doing business and areas of responsibility of employees involved in logistics processes in the warehouse**

Source: formed by authors

Taking into account the specifics of the conducted research, it should be noted that the design of optimization tasks for logistics processes with a new functional and distribution of areas of responsibility of employees requires a certain set of intellectual resources: knowledge, skills, skills, information and competencies of staff.

Consequently, the efficient use of intellectual resources in the logistics management of storage at the enterprise allows to formalize business processes; to reduce the inefficient use of working time by workers; to solve the issue of personnel turnover and to specify the functional of the personnel, with the focus on the implementation of the system of key performance indicators; to minimize the negative impact of the conflict in the “zones of responsibility” on the effectiveness of the logistics processes of the enterprise.

**Conclusions and suggestions**

To date, logistics warehousing management at an enterprise needs to improve the forms and methods of managing the resource system, in particular available resource asymmetries. This approach allows to transform existing disproportions of the unique resource combinations of the enterprise in its steady competitive advantages, which competitors will not have. So, resource asymmetry can be transformed into a unique competitive advantage by providing resource support to the economic activity of the enterprise, which allows to effectively use dynamic opportunities and meet the strategic goals of the enterprise. Important in this process is the information support for making managerial decisions, increasing the professional level of employees involved in the processes of warehousing in the enterprise, the application of information technologies. It allows to carry

out resource diagnostics, to exclude unexpected negative results of interaction of different types of resources. Of particular importance is the use of economic and mathematical methods to improve the planning, forecasting, control and optimal distribution of resources. Of particular importance is the use of economic and mathematical methods to improve planning, forecasting, control, and distribution optimality. Also, an important way to improve the efficiency of resource management is to train staff, increase their motivation, and apply innovative methods of intellectual resource asymmetries management that involves the implementation of scientific and technological advances in the daily business activities of companies.

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