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THE FORMATION AND EFFECTIVE USE OF INVENTORIES BY ENTERPRISES

The article considers the issues of formation and effective use of inventories by enterprises. It is confirmed that the subject of the inventory management policy consists of two main blocks: the inventory formation policy and the inventory use management policy. Inventory formation management occurs by applying inventory management models. Inventory use management is performed by means of indicator calculations of reserves effective use. Inventories are grouped and classified according to the most important features. Inventory management tasks and exiting models are carried out, which takes into account the classic and modern approach to doing business. It is proved that the concepts previously used fail to justify themselves in the new conditions. It is established that most companies in the world improve the efficiency of inventory management as follows: rationalization of processes between companies, shifting ownership of inventory towards suppliers (implementation of the principle of “inventory managed by supplier”), direct delivery of finished products to the consumer in accordance with his wishes and financial capabilities, inventory management using the principle of “just in time”, introduction of flexible (lean) production, etc. Thus, the main trend of foreign firms, in contrast to domestic ones, is the spread of the concept of inventory minimization. Nine provisions (theses) have been formulated for the methodology of forming various for managing inventory values of an enterprise.

Keywords: inventories, management system, inventory management, managements models, efficiency.

Introduction. Particularities of industrial enterprises functioning in modern economic conditions determine the need to organize and implement effective enterprise management. It is efficient management that ensures the integration of economic processes at the enterprise, connects the internal resources of the economic entity and the external environment, enhances its adaptive and competitive nature. In this context, effective management of current assets in general and inventory of goods and services in particular is significant and essential for enterprises.

Literature review. The theoretical basis of the research is the scientific works of domestic and foreign scientists in the field of inventory management. Various aspects of this problem are investigated in works of the following domestic scientists: V. I. Khomiakov [8], K. S. Olinichenko [4], V. V. Kovaliov, I. T. Stoianova, N. N. Balabanov, M. N. Ushakova, V. V. Kovaleva, E. S. Stoyanova, I. T. Balabanova, M. N. Kreinina, I. A. Blank, A. M. Podderegina, L. A. Ligonenko, M. G. Chumachenko, V. I. Nusinova, S. I. Salyga, A. M. Zolotarev [2]. Foreign scholars, such as E. F. Brigham, J. P. Blavatsky, P. Vumek, D. T. Jones, M. R. Linders, J. V. Horn, J. K. Shima, Taiti Ono also devoted their studies to this problem. Scientific research of inventory management based on the logistics approach is carried out by B. A. Anikin, Yu. I. Ryzhykov, A. M. Gadzhinsky, A. O. Kolobov, Ie. V. Krykavsky, V. E. Nikolaichuk, V. S. Lukinskiy, L. B. Mirotin, M. P. Gordon [9]. However, despite a rather keen eye of economists to this issue, a significant amount of findings and regulatory materials on this problem, a set of theoretical and applied issues on the formation of modern trends in inventory management and their modeling remains insufficiently developed.

Problem statement. To characterize current trends in inventory management, expand the scientific classification of reserves by the most important characteristics and models of their management.

Presentation of the main research material.

In contemporary specialized literature, there are different views on the subject matter of management. The problems of its development in recent decades have attracted the attention of many leading scientists and economists from all over the world. It has resulted in the emergence of various theories, which are still developing and multiplying in accordance with the current level of knowledge and needs of a society.

Based on the systematization and generalization of scientific works on the theory of inventory management, inventories are grouped and classified according to the most important features and are proposed in the form of Figure 1. The given classification of inventories takes into account their major aspects as objects of economic management in industrial enterprises.

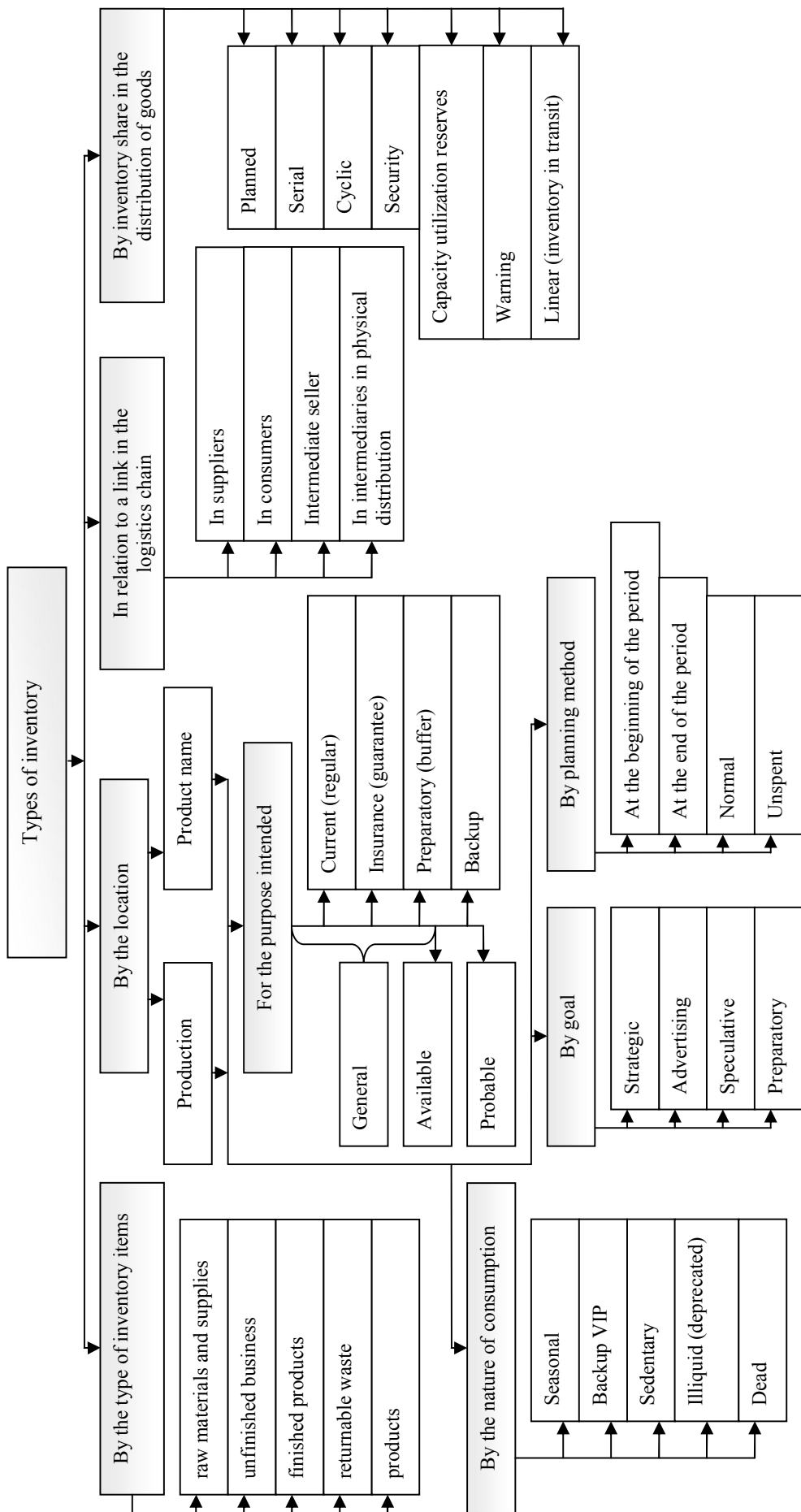


Figure 1 – Inventory classification

Source: summarized by the author

The subject of the inventory management policy consists of two main blocks: the inventory formation policy and the inventory use management policy. Let us consider these aspects of inventory management in Figure 2.

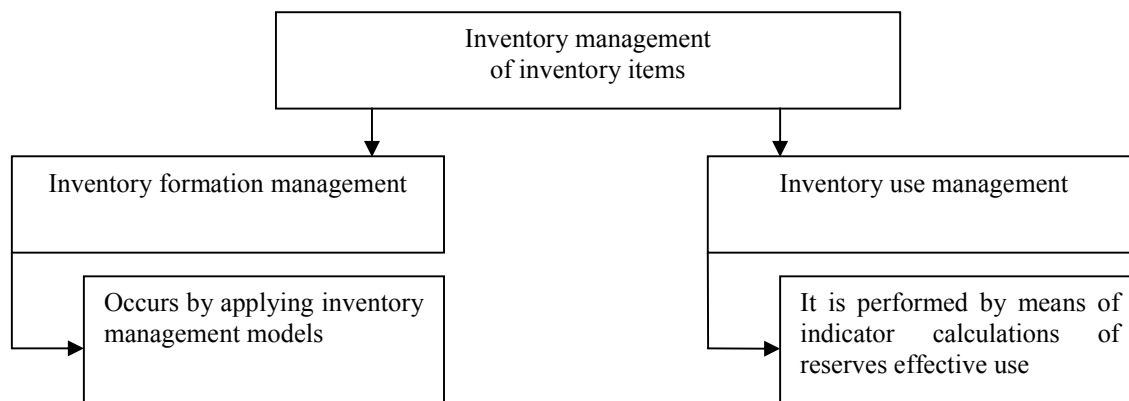


Figure 2 – Logic of process inventory management of goods and services

Source: summarized by the author

Inventory management includes the development of reasonable inventory standards, their planning, accounting, analysis, monitoring of the actual state and operational regulation. To increase the efficiency of the inventory management process and reduce the cost of monitoring of their condition, various models and methods of material resources structuring are applied in practice.

Inventory usage is managed through an assessment of its effectiveness. It is proved that the following factors contribute to improving of the inventory management efficiency: - the use of automated inventory management systems, - the development of economic and mathematical modeling, - improving the reliability and efficiency of data acquisition via modern information systems, - the development of forecasting methods, - increasing the skills of personnel engaged in inventory management, - integration and automation of logistics operations and functions, - the development of corporate information systems, - the development of quality management systems, which leads to a decrease in the need for inventory, - reducing the duration of the production cycle, - increasing competition in the market and improving the quality of customer service.

Three inventory management concepts (trends) have been formed until today:

1. *The concept of inventory maximization.* Trends in inventory maximization, traced back to works of authors before 1980, have been under consideration for a long time and are supposed to be obsolete. A high level of inventory is justified if the level of consumption is unknown, but the supply and distribution of products have become more organized. The development of the economy had gradually led to the fact that goods were obtained when required, but not when it was possible to purchase them. The situation of unjustified accumulation of inventories took place during the era of stagnation in the Soviet Union. The domestic economy of the 1970s – 1980s of the XX century is a vivid example of the concept of inventories maximizing.

2. *Inventory Optimization Concept.* At the end of the XIX century the development of the economy led to an increase in industrial production, which inevitably involved large volumes of multi-nomenclature reserves. It was at this time that the scientific approach to inventory management began to develop, which made it possible to find the optimal level of inventory with minimal maintenance costs. The only difficulty consisted in defining the optimal matter. Since 1915, the approach of optimizing the inventory level based on the optimal order size has been developed. During this period, the distinction between cost minimization and inventory minimization were left unattended. Throughout the 1920s, many companies reduced inventory, quite often to a level leading to lower production efficiency. The 1930s can be considered the beginning of the development of the inventory optimization concept. It consists in determining the feasibility of keeping the inventory in the optimal amount (most often according to the criterion of the minimum total cost of creating and storing stocks). Until now, this concept is widely accepted and most commonly used. A. N. Sterligova, Yu. A. Belyaev, G. L. Brodetsky, S. N. Zakomorny, A. M. Zevakov, V. V. Petrov, R. A. Radionov, A. R. Radionov, Yu. I. Ryzhikov, E. A. Khrutsky et al are proponents of this concept.

3. *Inventory minimization concept.* Businesses and organizations have recently come to the conclusion that inventory is a manifestation of extravagant living. In contrast to the representatives of the concept of inventory maximization, they absolutized the negative consequences of a high level of inventory, namely: 1) an increase in current costs associated with the inventory storage, in addition to an increase in the cost of warehouses maintenance, tax payments, insurance payments, service personnel payments; 2) a decrease in response time to consumer requirements; 3) a complication of the management process of inventories; 4) a decrease in profit on invested capital; 5) an increase in warehouse space; 6) overproduction, which is likely to cause product obsolescence; 7) an increase in the cost of production [7].

Japanese managers considered stocks to be a screen hiding the shortcomings of production: poor quality; inability to produce products in small batches; inability to plan correctly; inability to buy the right product correctly; failures in production; failures in the supply of products. L. Michael, J. George M. R. Johnson, E. F. Linders R. B. Harold J. Chase, Schreiberfeder, Jones Wumek supported this concept [1].

Thus, the analysis of the trends in the development of inventory management allows us to conclude that the choice of inventory level that is maximum, optimal or minimum, is set by the enterprise itself and is determined by the following factors: the working conditions of an enterprise, the features of its organizational culture, the readiness of management (primarily the highest level of management) for changes that will require the introduction of a particular concept of inventory management, relations with suppliers and consumers, the state of logistics infrastructure of the regions with which the enterprise is connected.

We believe that the concept of maximizing reserves is a thing of the past, the concept of optimizing reserves is adhered to by most scientists in their works and they argue that it is necessary to calculate the optimal level of reserves at enterprises, the concept of minimization is modern, the origins of which came to Ukraine from Japan and the United States. The current trend of inventory management, its minimization has long been used in western practice.

Management schools in the USA and Japan are now leading and are considered in other countries as a kind of standard for the development of management. The rivalry between the world's two largest economic systems, the United States and Japan-in the mid-80s, was characterized by a clear advantage of the latter in the field of industrial production. The basis of the competitive advantage of the Japanese was a sharp reduction in production costs and, as a result, market prices for products of machine-building, electronic and other capital-intensive industries. The American policy of protectionism towards its own producers, as a reaction to cheap imports of Japanese goods, failed to give the desired results: Asian competitors continued to push North American producers in both hemispheres of the world. The studies conducted by leading analysts and economists in the United States and Europe have shown that one of the main conditions for Japanese preference is insignificant (minimal) stocks. This approach to the production organization made it possible to reduce the investment base, which increases the return on investment (ROI), all other things being equal. Thus, the most successful companies in America based their activities on the idea of reducing inventory, which allowed their products to compete adequately with the Japanese. In our opinion, the theory of the Ukrainian management model is based on a combination of accumulated knowledge in the world and their adaptation to specific national conditions.

The classification of inventory management models addressing the classical and modern approach to doing business has been generalized on the basis of the literature analyzed (Fig. 3) [5]. The modern progressive aspect of supply and sales management is based on the dialectical development of four fundamental elements: Statistical Process Control (SPC), Integrated Quality Management (TQM), Business Process Reengineering (RBP), and Total Money Management (TCM). It is proved that the previously used classical concepts and models hardly seem to be rewarding in modern conditions. It is necessary to implement concepts that have proven themselves positively abroad (just - in-time; Kaizen – constant improvements; lean production and “minimum possible stocks”) In the practical activities of enterprises.

Some authors believe that the above-mentioned concepts and others, such as Lean production, “Six Sigma - 6σ – concept-six sigma”, “Five S”, TRM (universal enterprise management system) are components of the huge Japanese Kaizen management system (continuous improvements), based on the ideas of Deming, Juran, Feigenbaum and their Japanese colleagues Ishikawa, Taguchi and Singu. A careful study of other concepts, which are supposed to be the latest achievements in building of an effective management, described in many books, such as BSC (balanced scorecard system), ABC (process-based accounting), AMS – Agile Manufacturing System (fast-responding production system), SMS-Synchronous Manufacturing System (synchronous production system) proves them to be a less effective implementation of the same ideas [3].

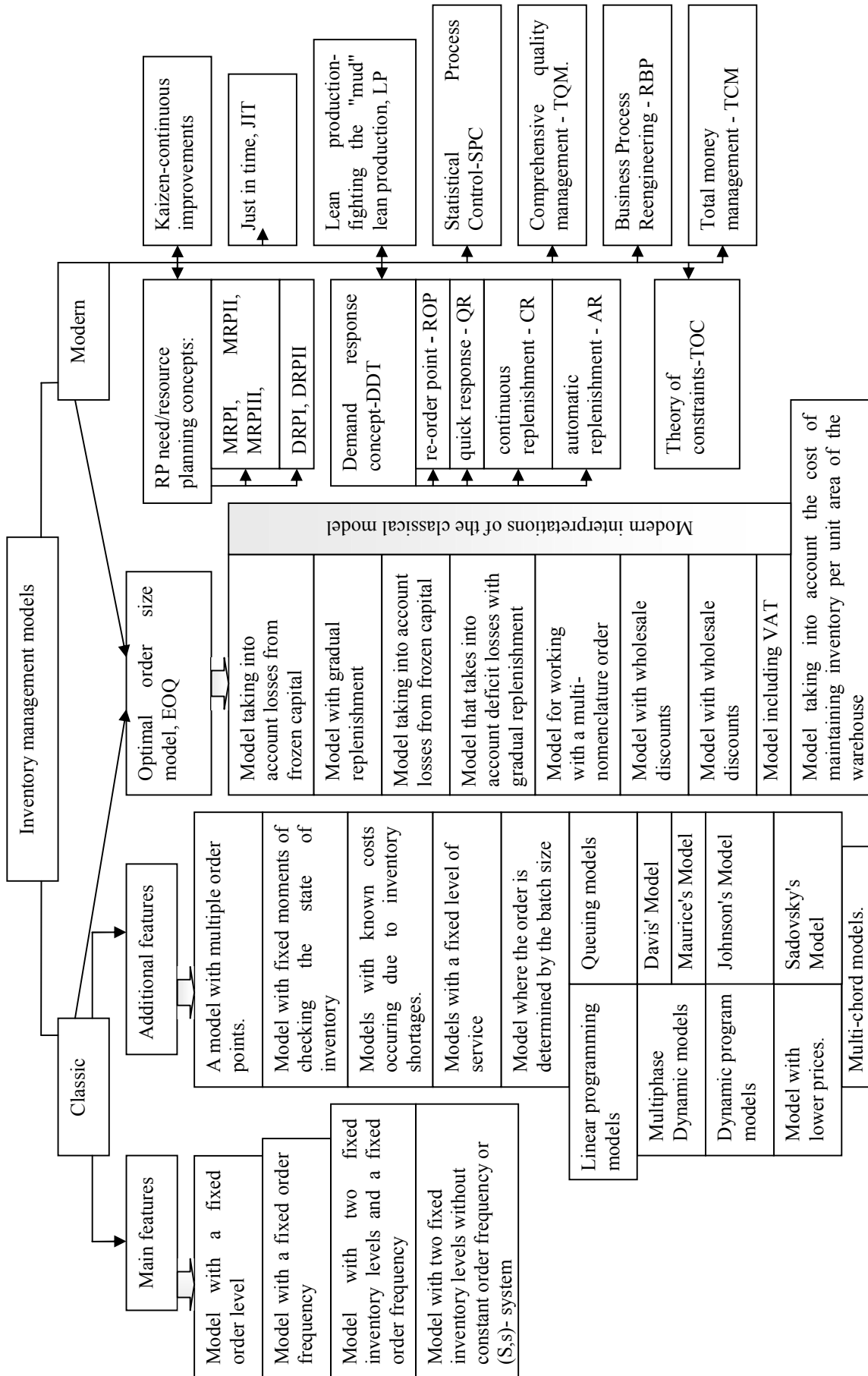


Figure 3 – Classification of inventory management models

Source: summarized by the author

Joining the economists who adhere to this approach to the modern interpretation of business management, we believe them to be the systems facilitating the transition from the centralized rigid management to business based on the involvement of employees and the predominance of horizontal approaches to the management over vertical ones. From this point of view, various classic MRP and ERP variants also provide support for inefficient business concepts that are a thing of the past. They are replaced by various versions of Kaizen representation.

That is why the methods of managing the financial and economic activities of enterprises are of great interest. They also have proven themselves positively abroad.

The above mentioned indicates the relevance and importance of using inventory management tasks. Their solution is not only qualitative, but also quantitative. The authors aim not to cover the technique of mathematical calculations in detail, but to systematize numerous works on the theory of inventory management, by grouping the corresponding problems. Based on the analysis of numerous works on the theory of inventory management, the systematization of inventory management problems is carried out, which are discussed in Fig. 2. At the same time, the main elements of optimal inventory management are distinguished: - supply system, - demand, - inventory replenishment, - cost functions, - restrictions, - adoption of an inventory management strategy.

Any combination of these elements defines a reference inventory management model. The model tends to take any shape. Simulation models are often a complete analogue of the inventory management process. Queuing models are statistical and present certain assumptions about the distribution of demand, inventory replenishment moments, and their relationship. In some models, the relationships between indicators seem distorted, but, nevertheless, such models give useful and important results. Despite the desire to create generalized models, the inventory management schemes studied in the modern literature probably fail to meet even a small part of the tasks arising in the practical activities of enterprises. In each specific situation, it is necessary to adapt existing models to the problem, or, using only the general principles of inventory management theory, develop new models.

Using models to analyze and solve scientific needs is not a new issue. In order for the model to be useful, it must provide the possibility of applying the mathematical apparatus and result in certain helpful solutions acceptable in real conditions. Unfortunately, few models can be used in the practical activities of industrial enterprises, although they have scientific value.

Today, dozens of Ukrainian enterprises are already trying to use modern business methods, and many of them have achieved impressive results. Some of them, using only their own capabilities and the profit received as a result of implementing these systems, were able to do without significant investments in carrying out production transformations.

However, with the right approach, after thinking carefully about all the links in product creation, it is possible to identify really difficult stages where a flow is impossible to be built, and gradually create it in other parts of production. It is next to impossible for Ukrainian enterprises to immediately switch to a fundamentally new, ideologically supported system. But the effect of implementing such an ideology outweighs the difficulties that may arise. When implementing modern systems, there are undeniable advantages. First of all, this is an increase in labor productivity, which subsequently reduces the cost of production. The high cost of the product is a problem of Ukrainian production, especially in the context of competition with China. Such systems make it possible to improve the quality of products, flexibility of the enterprise in relation to the market, to customers, which, of course, is extremely important for Ukrainian enterprises that have to adapt to the rapidly changing requirements of modern consumers.

A critical analysis of the modern literature on inventory management of enterprises allows us to draw the following conclusions, which should be based on the initial principles (regulations) of management [6]. In our opinion, the methodology for forming and effectively using inventory of goods and services of an enterprise should be based on the following provisions (theses).

Thesis one. According to E. F. Brigham [11], the planning process in companies with effective management begins with a forecast of sales volumes for the next 5 years. Then the necessary assets are determined to maintain the target level of sales volumes and a decision is made on the financing sources for the necessary assets. The following formula is used to determine the additional funds required (DNF):

$$DNF = \begin{array}{l} \text{required magnification –} \\ \text{in assets} \end{array} - \begin{array}{l} \text{automatically growing –} \\ \text{liabilities} \end{array} - \begin{array}{l} \text{increase in unallocated asset} \\ \text{profits} \end{array}$$

$$\text{Or } DNF = \left(\frac{A}{S}\right) \cdot \Delta S - \left(\frac{L}{S}\right) \cdot \Delta S - M \cdot Sf \cdot (1-d) \quad (1)$$

where $\left(\frac{A}{S}\right)$ are assets that should increase with the sales growth, expressed as a percentage of sales, or a necessary increase in assets expressed in cash by 1 US dollar of sales growth; $\left(\frac{L}{S}\right)$ – liabilities that should increase with the sales growth; Sf – projected total sales for the next year; M – profit ratio by 1 US dollar of sales; d – share of profit paid in the form of dividends; A – assets; L – liabilities; S – sales volumes of the base year.

Formula (1) takes into account the assumption that: 1) each asset item increases in direct proportion to the increase in sales; 2) accounts payable and accumulated payments increase by the same percentage as the increase in sales, and 3) the profit ratio remains unchanged.

However, these assumptions seldom take place. Thus, there is an *economy of scale* when using most assets. In this case the ratios begin to change with the increase of the firm size. When sales increase, inventory increases more slowly than sales volumes, thus the ratio of inventory to sales decreases. This relationship is linear, but non-linear relationships often arise in case when an enterprise uses modern inventory management methods to establish inventory levels. Manufacturing enterprises can achieve a reduction in current assets in various ways. For example, "General Electric" Corporation reduced the production time of one car by 20%, from 50 to 30 days by reorganizing the production process of electric locomotives. Thus, in the new conditions, with the production of 2.000 electric locomotives per year (5.5 per day) and with their average cost of 5 500.000 for a car, the amount of working capital involved will be 82.2 million US dollars in contrast to 139 million US dollars under the old system. This will free up 56.7 million US dollars provided that the company makes a profit of 10% of the capital, which will lead to an increase in operating profit of 5.67 million US dollars. Such changes, implemented in all areas of the company's activity, can greatly increase its profitability.

A study of the nature of relationships between inventory and sales (production) volumes at manufacturing enterprises of the USA and Ukraine engaged in various types of production is carried out, which are further used in the development of methods for the formation and effective use of inventory of goods and services.

Thesis two. Each enterprise (type of industrial activity) is characterized by its own values of the duration of inventory turnover: critical (corresponding to the conditions of break-even operation of the enterprise), target (when targeted profit is provided) and optimal (when the enterprise reaches the world level of inventory management). The situation is similar with accounts receivable and payables. These indicators are key in shaping inventory management goals of an enterprise.

Thesis three. The competitiveness of an enterprise depends on the level of fuel and energy resources consumption and the dynamics of their prices. Therefore, the level of prices for the final products of an enterprise depends on the use of internal reserves, including reducing inventory costs.

Thesis four. Each enterprise has a certain value of the operational leverage ratio. When a particular goal, growth rate for sales volumes are set, the "operating leverage effect" formula can be used to determine how much the amount of operating profit increases with the operating leverage ratio developed at a given enterprise. Differences in the achieved effect at enterprises will be determined by differences in the ratio of their fixed and variable operating costs, characterized by the ratio of operating leverage. Therefore, when production volumes increase, the cost price and, consequently, profit change with different intensity.

Thesis five. There is a theoretical contradiction between the possibility of the linear model "costs-results", which allows determining the volume of additional profits at a certain (planned) level of production volumes and ensuring these volumes in the conditions of the value of the multiplier M characteristic of this type of industrial activity. This contradiction lies in the fact that, as a result of investing additional profits obtained in accordance with the linear model, the corresponding volumes of production growth are not provided. Therefore, the necessary adjustments should be made during calculations.

Thesis six. The intensity of the decline in stocks investment depends on their baseline level: the higher this level, the greater the potential opportunities for saving on stocks. It is logical to divide these savings into: employee motivation, production growth, and loss repayment.

Thesis seven. At the entrance to the production system, it is advisable to transfer inventory management to suppliers, and at the exit, switch to direct distribution of manufactured products to consumers for individual orders.

Thesis eight. In many works of Ukrainian economists, the priority of production types is determined on the basis of a retrospective analysis and the transfer of its results in the future. It is more expedient to form an idea of the enterprise priority based on the expected results of potential opportunities. In this case, the volume of current inventory, which is minimized (with a negative sign), is maximized in the new model and creates a more reliable basis for predicting the trend of increasing the enterprise competitiveness.

Thesis nine. The objective function for evaluating the selected inventory management option should take into account all previous provisions (theses).

Target function for the T-th year:

$$F_t = \Delta\Pi p_t + \Delta Z_t + \Delta C_t + \Delta A_t - \Delta E_t \rightarrow \max \quad (2)$$

where $\Delta\Pi p_t = \Pi p_t - \Pi p_{(t-1)}$ is the profit growth due to economies of scale;

$\Pi p_t, \Pi p_{(t-1)}$ – profit in T-th and (t - 1) - th years;

$\Delta Z_t = Z_{t_1} - Z_{t_2}$ – savings of investment in inventory;

ΔC_t – savings from reducing the cost of maintaining inventory, due to a decrease in their volume,

$\Delta C_t = k \cdot \Delta Z_t$ where k is a coefficient that takes into account the share of inventory maintenance costs in relation to the amount of the inventory itself;

Z, E – respectively, inventory and expenses for PER.

Thus, nine provisions (theses) have been formulated for the methodology of forming various options for managing inventory of inventory values of an enterprise.

Therefore, when conducting a study of the complex impact of savings (overspending) of investment in reserves and rising prices for fuel and energy resources on the expected competitiveness of enterprises engaged in various types of activities, it is necessary to take into account the following stages:

1) determination of the production scale impact only on the basis of the operational leverage effect adjusted for the multiplier effect of production use of earned additional investment resources from profit growth;

2) calculations of the impact on the profitability of enterprises and the price of their products, rising prices for fuel and energy resources;

calculations of the impact on production efficiency of implementing different inventory management strategies with different dynamics of fuel and energy prices.

Conclusions. Based on the systematization of numerous works on the theory of inventory management, a grouping and classification of inventory management tasks and existing models is carried out, which takes into account the classic and modern approach to doing business. It is proved that the concepts previously used fail to justify themselves in the new conditions. It is established that most companies in the world improve the efficiency of inventory management as follows: rationalization of processes between companies, shifting ownership of inventory towards suppliers (implementation of the principle of “inventory managed by supplier”), direct delivery of finished products to the consumer in accordance with his wishes and financial capabilities, inventory management using the principle of “just in time”, introduction of flexible (lean) production, etc. Thus, the main trend of foreign firms, in contrast to domestic ones, is the spread of the concept of inventory minimization.

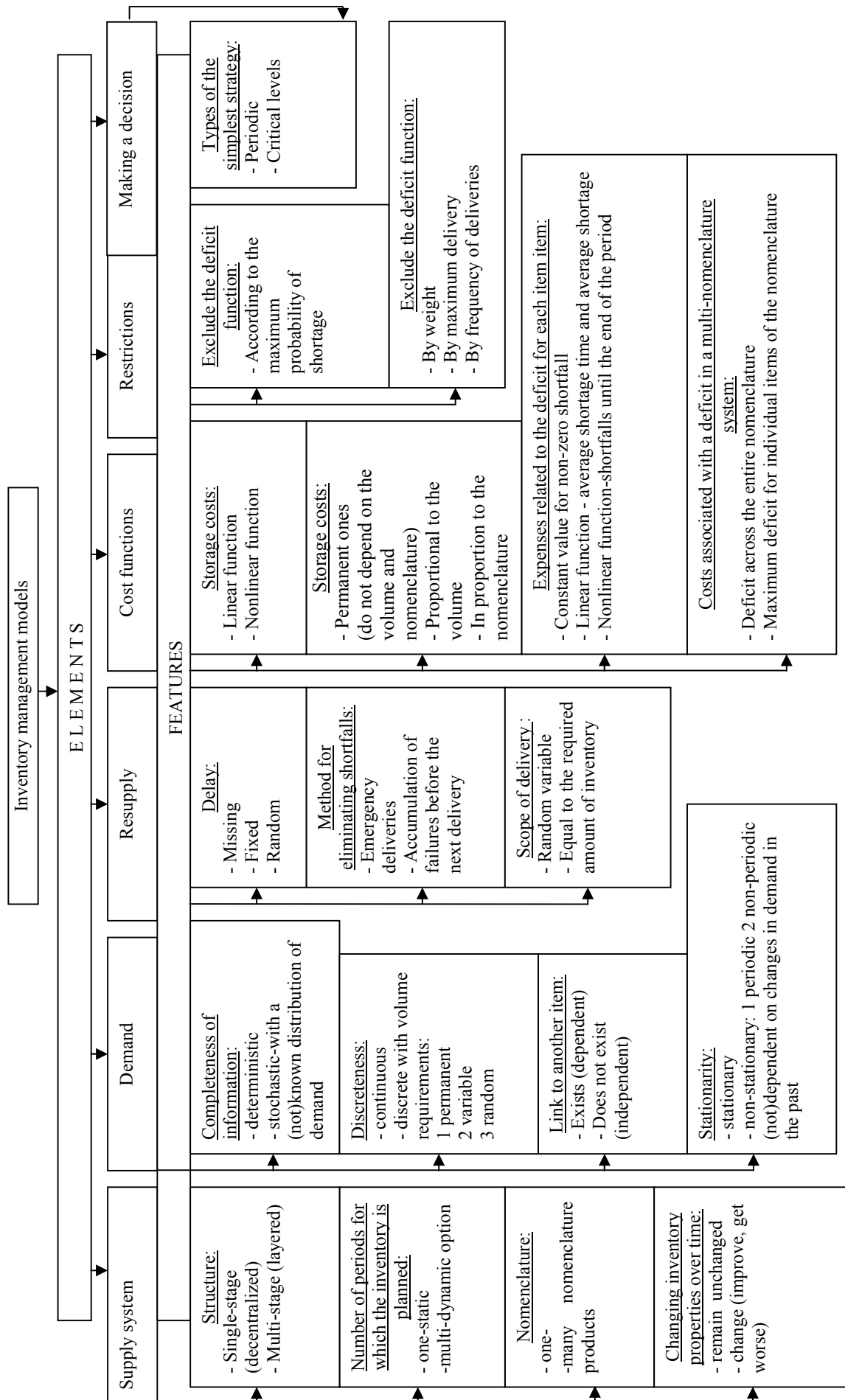


Figure 4 – Classification of inventory management models

Source: summarized by the author

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ФОРМУВАННЯ ТА ЕФЕКТИВНЕ ВИКОРИСТАННЯ ЗАПАСІВ ПІДПРИЄМСТВАМИ

Постановка проблеми. Особливості функціонування підприємств промисловості в сучасних економічних умовах зумовлюють необхідність організації і здійснення ефективного управління підприємством. Саме ефективне управління забезпечує інтеграцію економічних процесів на підприємстві, пов'язує воедино внутрішні ресурси господарюючого суб'єкта і зовнішнє середовище, підсилює його адаптивну і конкурентоспроможність. У цьому контексті значущим і суттєвим для підприємств є ефективне управління оборотними активами в цілому і запасами ТМЦ зокрема.

Мета. Охарактеризувати сучасні тенденції в управлінні запасами, розширити наукову класифікацію запасів за найбільш важливими ознаками та моделі їх управління. Визначити основні принципи та положення методики формування й ефективного використання запасів.

Результати. На основі систематизації та узагальнення наукових праць з теорії управління запасами проведено групування і класифікацію запасів за найбільш важливими ознаками. Наведено класифікацію запасів, що враховує всі основні їх аспекти, як об'єктів економічного управління на підприємствах промисловості. Доведено, що предмет політики управління запасами товарно-матеріальних цінностей (ТМЦ) складається з двох основних блоків: політики формування запасів ТМЦ та політики використання запасів. Управління формуванням запасів включає розробку обґрунтованих норм запасів, їх планування, облік, аналіз, контроль за фактичним станом і оперативне регулювання. Для підвищення ефективності процесу управління матеріальними запасами і здешевлення контролю їх стану в практиці використовуються різні моделі та методи структуризації матеріальних ресурсів. Управління використанням запасів здійснюється через оцінювання їх ефективності. Доведено, що підвищенню ефективності управління запасами сприяють такі чинники: використання автоматизованих систем управління запасами; розвиток економіко-математичного моделювання; підвищення надійності й оперативності отримання даних за допомогою сучасних інформаційних систем; розвиток методів прогнозування; зростання кваліфікації персоналу, що займається управлінням запасами; інтеграція та автоматизація логістичних операцій і функцій; розвиток корпоративних інформаційних систем; розвиток систем управління якістю, що приводить до зниження потреби в запасах; скорочення тривалості циклу виробництва; посилення конкуренції на ринку і підвищення якості обслуговування клієнтів.

Проаналізовано концепції максимізації, оптимізації та мінімізації запасів. Встановлено, що концепція максимізації запасів відійшла в минуле, концепції оптимізації запасів дотримується більшість науковців у своїх працях, які стверджують, що необхідно розраховувати оптимальний рівень запасів на підприємствах, концепція мінімізації – сучасна, витоки якої прийшли в Україну з Японії та США. На сучасному етапі використовується все ширше концепція їх мінімізації.

Узагальнено класифікацію моделей управління запасами, які враховують класичний та сучасний підхід до ведення бізнесу. Сучасний прогресивний аспект управління в галузі постачання та збуту базується на діалектичному розвитку чотирьох принципових елементів: статистичний контроль процесів, комплексне управління якістю, реінжиніринг бізнес-процесів, тотальне управління грошима. Доведено, що класичні концепції та моделі, які раніше використовувались, у сучасних умовах себе не виправдовують. В практичну діяльність підприємств необхідно впроваджувати концепції, які позитивно зарекомендували себе за кордоном (точно в строк – *just-in-time*; кайдзен – постійні поліпшення; ощадливе виробництво – *lean production* та «мінімально можливі запаси»).

Виявлено, що такі концепції, як ощадливе виробництво, «шість сігм», загальна система забезпечення діяльності підприємства, є компонентами величезної системи японського менеджменту кайдзен (постійні поліпшення), що ґрунтується на ідеях Демінга, Джурана, Фейгенбаума та їх японських колег Ісікави, Тагути та Сінгу. Уважне вивчення інших концепцій, видаваних за нове останнє слово в побудові ефективного менеджменту, таких як система збалансованих показників, облік, що базується на процесному підході, швидкореагуюча система виробництва, система синхронного виробництва, свідчить, що вони виявляються менш ефективним втіленням тих же ідей.

Висновки. В статті сформульовано дев'ять положень (тез), на яких повинна базуватися методика формування різних варіантів управління запасами товарно-матеріальних цінностей

підприємства. Отже, при виконанні дослідження комплексного впливу економії (перевитрат) інвестицій в запаси і зростання цін на паливно-енергетичні ресурси на очікувану конкурентоспроможність підприємств, зайнятих різними видами діяльності, необхідно враховувати наступні етапи: 1) визначення впливу лише масштабу виробництва з використанням ефекту операційного левериджу, скорегованого на мультиплікаційний ефект виробничого використання зароблених додаткових інвестиційних ресурсів від зростання прибутку; 2) розрахунки впливу на прибутковість підприємств та ціну їх продукції зростання цін на паливно-енергетичні ресурси; 3) розрахунки впливу на ефективність виробництва впровадження різних стратегій управління запасами при різній динаміці цін на ПЕР.

Ключові слова: запаси, система управління, управління запасами, моделі управління, ефективність.

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