

FINANCIAL EFFECTS OF INVENTORY MANAGEMENT IN TRADING COMPANIES - EOQ MODEL

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Abstract. *Effective financial management of trading companies refers to the constant questioning of the necessity of investing in any form of business assets. Therefore, inventories, which often assume major cash investments, must be carefully monitored and controlled. Special emphasis is placed on the costs arising from their existence. Based on the analysis of the costs associated with acquiring and holding an inventory, commercial companies make different decisions regarding the size of the order and the time of its placement. Application of various models, including the "optimal inventory management" model, can significantly facilitate the decision-making process. The analysis in this paper focuses on the effects of the application of the EOQ model in supplies optimization of the company "XY". The analysis showed that there is an economic motivation to apply this model, since its implementation significantly reduces the inventory costs, which contributes to overall profitability. By applying this model in the case of the trading company "XY", the total inventory costs would be lower by 1.88%. Ordering costs would be reduced by 30%, the inventory holding costs would increase by 7.45%, but it would significantly reduce investment in inventories.*

Key Words: *inventory holding costs, costs of ordering, safety stocks, EOQ model.*

1. INTRODUCTION

Inventories, as part of current assets which are expected to be converted to another form of working capital (receivables or cash) within less than one year, occupy a significant portion of business assets in most commercial enterprises. Keeping this fact in mind, the existence of inventories implies proportionally significant financial investment. Therefore, inventory optimization is really an optimization of financial decisions when it comes

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to the cost of acquiring and holding an inventory. Forming and holding inventories is basically initiated by the desire to ensure the continuity of operations of the trading company. Their disappearance in stores can have significant negative consequences, not only for retailers but also for their suppliers. In addition to missed sales, stock loss has a negative effect on the reputation (goodwill) of a commercial enterprise. According to the organization "Roland Berger Strategy Consultants" (2003), the cost of a lack of supplies to all members of the supply chain amounts to more than 4 billion euro (that estimate included only the buyers who, when faced with a shortage of supplies, refrained from buying). In addition to striving to meet customer demands and offer the right product at the right time and the right place, inventories in the trading company can be held for speculative and safety reasons (Roca, 2004). The safety motive is related to the formation of reserves in situations when the current exceeds the expected sales volume, while the speculative motive is present due to buying larger quantities of products for use in market potential benefits (discounts, expected changes in prices and other). Also, holding inventories can result from certain contractual clauses, by which vendors condition the business cooperation with their representatives. Frequently, reputable manufacturers bind their authorized agents to purchase and maintain a certain level of inventories (Stančić, 2006, p. 327). Despite these arguments, the holding of inventories has its price. Of the total logistics costs in the United States, which in 2010 amounted to \$ 1.2 trillion, the cost of inventories accounted for 31%, respectively, \$ 396 billion (which is more than the year 2009 for 10.3%) (Council of Supply Chain Management Professionals, 2010). From the standpoint of rational stock management, these costs are usually divided into the cost of holding and the cost of acquisition.

If the demand could be fully predicted, the need for holding the inventories throughout the supply chain would disappear. However, given the frequent market changes and unpredictable customers' reactions, a certain amount of supplies "wait" in one of the trade stages. Despite the numerous benefits, in the form of greater flexibility and in the reduction of the uncertainty of individual features in the trading company, keeping them has a price. Also, certain costs arise during the obtaining of supplies. In addition to these costs, in this paper we present a model of "optimal inventory management", whose implementation can achieve significant savings for the business. Its effects are presented using an example of a trading company which imports and distributes a variety of product categories within the territory of the Republic of Serbia. Keeping in mind all the benefits of applying the EOQ model, we have stated these hypotheses:

H1a: by applying the EOQ model, the company XY would in the reporting period have lower inventories investments

H1b: applying the EOQ model the company XY would in the reporting period have lower total costs of holding inventories

However, if the cash flow dynamics is included in the analysis it is necessary to compare the current financial position of the company (using the current inventories policy) with the projected one, after applying the changes in procurement policy and stock usage.

H2: discounted value of the differential cash flow achieved using the alternative stock policy is higher than the value of the cash flow achieved with the current policy in the reporting period

Integrating the net present value concept, disatvanteges troškovnog pristupa are eliminated. Emphasis is placed on the difference between the two cash flows, without neglecting the time value of money, which is an important factor in the decision-making process.

2. COST OF INVENTORIES IN THE SUPPLY CHAIN

The average inventory holding costs are between 25% and 50% of the product value (Rem Associates, 2002). They consist of all costs that are caused by the existence and holding of stock in a company (Krasulja, Ivanišević, 2005, p. 227). Some of these costs are fixed with respect to changes in the volume of inventory, such as the cost of storage space and equipment, while others vary more or less in proportion to the increase or decrease in inventories. From the point of decision-making about the inventory, the only relevant things are variable components of the total inventory costs.

One of the most important costs is the cost of capital. It can be defined as the opportunity cost in terms of missed returns that the Company could realize by investing limited funds to the best alternatives. Most commonly calculated using the following formula (Will, 2007):

$$WACC = \frac{E}{D+E} (Rf + \beta * MRP) + \frac{D}{D+E} Rb(1-t), \quad (1)$$

Where: E – equity capital, D – value of borrowed capital, Rf – risk-free return rate (return rate of government bonds), β – coefficient that depends on company, MRP – market rate of return, Rb – interest rate for borrowed funds, t – tax rate;

In addition to the cost of capital, the holding costs include storage, insurance, property taxes, risks, and costs of depreciation and obsolescence. The next table presents all holding cost categories, expressed in percentages relative to the value of inventories.

Table 1. Inventory holding costs (Rem Associates, 2002)

Holding costs	Percentage from inventory value
Cost of capital	6% -12%
Property tax	2% - 6%
Insurance	1% - 3%
Storage	4% -10%
Risk (damage, theft)	6% -12%
Obsolescence	6% -12%
Total	25% -55%

Obtaining costs are related to disposable replacement supplies and unlike holding costs, they are considered, more or less, independent of the order size. They include the costs of issuing the order, the cost of receiving, unloading, inventory control and storage, as well as missed volume discounts (Krasulja, Ivanišević, 2005, p. 224). They occur most often in the procurement process. If standard items are purchased from a regular business supplier, such an acquisition would be a routine job and would be done with a relatively low cost. Conversely, if the purchases in question require prior studying and analyzing the market offer of more competitive suppliers, the cost will be much higher.

3. A MODEL OF OPTIMAL INVENTORY MANAGEMENT

The trading company generally makes two basic types of decisions with respect to inventories. The first is related to the amount of stock needed to be ordered at once and the other to time intervals spent issuing orders. To make these decisions, the management of the trading company has, at its disposal, different theoretical approaches and models of optimal inventory management.

One of the models used to determine the optimal order quantity is the EOQ model that well-organized companies often apply in practice. Under the optimal order size we assume the quantity of the product that provides the lowest total holding and acquiring costs of inventories. If the costs of one order are proportionally larger, obtaining supplies should be carried out in larger quantities. In contrast, as quantity of orders increases, the average amount of investments in inventories increases, together with the holding costs. Based on a balancing of the given cost, "EOQ" model is represented by the formula (Muckstadt, Sapru, 2010, p. 20):

$$Q = \sqrt{\frac{2DS}{hC}}, \quad (2)$$

Where: D – annual demand for products, S – ordering costs, C – purchase price, h – holding costs (percent).

This formula is applicable when a company orders only one type of inventory. However, in practice, when trading companies from certain suppliers order different product categories, the "EOQ" model requires some modifications. In such situations, calculate the frequency of ordering, i.e. the optimal number of orders during the year. It is expressed as follows (Chopra, Meindl, 2004, p. 261):

$$n^* = \sqrt{\frac{\sum_{i=0}^n hC_i D_i}{2S^*}}, \quad (3)$$

Where: n^* – number of orders per annum, C_i – purchase price, h – holding costs (percent), D_i – annual demand for products, S^* – fixed costs of ordering, n – different types of products.

After determining the optimal size of the order, it is necessary to determine the moment of its placement. It represents the inventory level which, when reached, requires the need to place a new order. Assuming that the new order matures when inventories reach zero level, the re-order point can be represented by the following equation (Muckstadt, Sapru, 2010):

$$ROP = D * L, \quad (4)$$

Where: ROP – re-order point, D – daily demand volume, L – time of order accomplishment.

The application of these models has a number of limitations. The "EOQ" model is based on the assumption that the demand is equal to the total quantity ordered annually. However, in reality, consumption and inventory sales can fluctuate at different times. Consequently, the trading company is forced to keep a certain level of safety stock (SS), not to get into the situation of a lack of supplies and the inability of implementing the received orders of their customers. In addition, it is difficult to count on the constant time

execution of orders, because it is often subject to sudden and unpredictable fluctuations. Therefore, the re-order point must be corrected for the level of safety stock (SS):

$$ROP = D * L + SS. \quad (5)$$

Safety stock size is a function of "Customer Service Level" (CSL) and the standard deviation of demand for the period L (σL). It can be expressed by the formula (Chopra, Meindl, 2004, p. 326):

$$ss = F_s^{-1}(CSL) * \sigma L = NORMSINV(CSL) * \sigma L. \quad (6)$$

Customer Service Level (CSL) is the probability that the trading company will not be in the situation to lack of stock. If "CSL" has a value of 0.9, this means that in 9 of 10 cases, the buyer will be served. The optimal level of customer service can be obtained by using the following equation (Chopra, Meindl, 2004, p. 350):

$$CSL = 1 - \frac{HQ}{DCu}, \quad (7)$$

Where: H – inventory holding costs, Q – quantity of order, D – demand volume, Cu – lack of inventory costs. The optimal level of customer service depends on both the cost of holding, and lack of inventory costs. If the costs of holding are higher, and lack of inventory costs is lower than usual, the trading company can opt for a lower level of customer service and vice versa.

4. THE EFFECTS OF APPLYING THE OPTIMAL INVENTORY MANAGEMENT MODEL

The effects of applying the optimal inventory management model can be seen in the practical example of a wholesale trading company "XY", which imports and in the Republic of Serbia market sells products X1, X2, X3 and X4. All products are ordered from the same supplier at a similar price, and are distributed to retail commercial enterprises. A part of the data used in the analysis was taken from the financial reports of the company (balance sheet and income statement) for 2009, 2010, and 2011, and the other part was obtained through interviews with employees of the company's commercial service. Before the implementation of the model, financial analysis and inventory classification was performed, based on the principles of "ABC" method.

4.1. Financial analysis of inventories

Most business decisions, including those related to inventory, are based on the analysis of demand and sales. In addition to demand, another object of analysis is the quantity of the ordered products.

In the first eight months of 2011, the company "XY"'s total demand for the products of "X" amounted to 1,134,758 units, while 1,147,200 pieces were ordered from the suppliers. During the year, six orders were completed, with an average ordered quantity (Q) of 191,200 bulbs.

Table 2. The level of demand and the quantity ordered of products from group "X" in the company "XY" in 2011

Products	Demand (D)	Quantity ordered	Number of orders	Average size of orders (Q)
X1	521,578	561,800	6	93,634
X2	339,036	335,700	6	55,950
X3	201,987	182,700	6	30,450
X4	72,157	67,000	6	11,166
Total	1,134,758	1,147,200	6	191,200

Based on data of monthly sales and orders, including the initial state of the inventories, it is possible to express their average level for all kinds of products from group "X". Average inventory is calculated using the formula (Rodić, Filipović, 2006, p. 56):

$$\text{Average inventories} = \left(\sum_{i=1}^n Z_{pi} - Z_{ki} \right) / n \quad (8)$$

Where: Z_p – inventories at the beginning of month, Z_k – inventories at the end of month, n – number of months.

Also, the analysis included the inventory turnover ratio (Ko), and the number of inventory turnover days. The inventory turnover ratio, as a generally accepted method for testing convertibility of inventories into cash, is obtained dividing the cost of the product realized with an average value of inventories during the year (Krasulja, Ivanišević, 2005, p. 28). It can be determined in physical units of measurement as the relative ratio of the total number of units sold and the average number of stock units in this period. Number of inventory turnover days is calculated as the number of days in the year divided by the inventory turnover ratio. Their values, as well as the average amount of supplies for the first eight months of 2011 are presented in Table 3.

Table 3. Turnover ratio, number of inventory turnover days and value of average inventories (products of group "X") in 2011

Products	Average inventory (Sa)	Demand (D)	Ko	Number of inventory turnover days
X1	72,584	521,578	7.18	50
X2	33,440	339,036	10.1	36
X3	38,016	201,987	5.30	68
X4	6,815	72,157	10.58	34
Total	150,855	1,134,758	7.50	48

The average turnover ratio for all kinds of products in group "X" (X1, X2, X3 and X4) in 2011 amounted to 7.5 and the number of turnover days was 48. This ratio shows that the company sells (realizes) inventories 7.5 times in a year, i.e. that duration of one turnaround is 48 days. The highest turnover ratio, and also the shortest time inventory turnover, was noted looking at the X4 product.

4.2. Classification of inventories in the company "XY"

Companies that operate with a large number of products should direct particular attention toward the analysis and classification of inventories, in order to perform the allocation of its financial resources more efficiently and effectively. In the trading company "XY", products of group "X" stand out from the rest, making the most of the sales. However, even within the group, sales of individual products differ. Relative to the total sale of 5.7 million pieces from 2009 to 2011, more than 77% were products X1 and X2, as can be seen from Table 4.

Table 4. Demand structure for products from group "X" (2009-2011)

Products	No. units sold (in thousands)	Shares in sale (%)	Cumulative share
X1	2,767	48.4	48.4
X2	1,677	29.3	77.7
X3	976	17.1	94.8
X4	292	5.2	100.0
Total	5,712	100.0	-

Based on the data, it is possible to make an "ABC" analysis, based on the "Pareto optimum" rule ("80-20"). Products, according to their importance, which is usually determined by the volume of sales or profitability, can be categorized into three classes: A, B, and C (Roca, 2004).

The products from group A significantly affect annual sales, making 15-20% of the assortment. They require detailed inventory analysis and control. Products from group B have moderate importance in terms of participation in annual sales. They make 20-35% of the assortment and are mostly controlled by using routine methods. The last place belongs to products of group C. They have very little impact on the trend of annual turnover (5-10%), so the analysis and control of those inventories are simplified.

In the company "XY", X1 products can be classified in class "A", because even though they make only 16.6% of the assortment, they participate in an annual turnover by more than 48%. Class "B" consists of X2 and X3 products. They represent a third of the assortment, and annual sales account for 46%. The second half of the assortment, which in addition to product group X makes several product categories, is a class "C", with a share in sales of 5-6%.

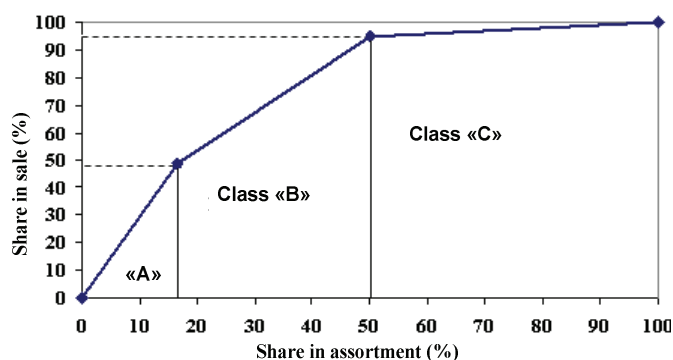


Fig. 1. ABC Classification in company "XY"

Products from "A" and "B" class greatly affect the annual turnover. They make about 95% of the company's sales, so special attention should be paid to monitoring and the control of movement in it.

4.3. Costs of inventories in the company "XY"

Inventories are evaluated by costs caused with their formation. Exactly by buying the product, the company has to separate some funds and invest them in inventories. In this way, product acquisition costs result (the cost of products purchased). On an annual basis they are expressed as the product of the purchase price per unit (C) and the annual level of demand (D) (Chopra, Meindl, 2004, p. 254):

$$\text{Annual costs of products} = C * D. \quad (9)$$

The company "XY" in the first eight months of 2011 purchased 1,134,758 pieces of products X1, X2, X3 and X4, at an average purchase price of 18 dinars (C). Based on these data, the cost of the products purchased in 2011 amounted to 20,649,600 dinars. Besides the cost of products purchased, financial analysis included costs of holding (H) and the cost of obtaining supplies. In the company "XY", from several categories of holding costs, the most important position is occupied by the cost of capital and taxes. Other categories of costs of holding either negligible or are not directly proportional to the level of inventories.

When calculating the cost of capital, formula [1] has been used. Part of the data, such as the value of equity (E) and debt capital (D) were taken from the financial reports. For the risk-free rate of return (Rf) the yield on government bonds of old foreign currency savings was taken, which was 5.2% in 2011 (RZS, 2011), while for the coefficient of Rb the active weighted interest rates on loans in dinars were taken. It amounted to 12.82% in 2011 (RSO, 2011). To obtain specific information, such as the rate of business enterprise risk (β) and the market premium rate (MMR), we employ a special formula. The B coefficient, which we get by using the formula below (Damodaran, 2007, p. 577), indicates the likelihood that the investment (investment) will not return:

$$\beta = \beta_u * (1 + (1-t) * D/E), \quad (10)$$

Where: β_u – rate of business risk for company without debt, t – profit tax rate.

The coefficient β_u is determined for each business activity separately. Its value for the distribution and retail sector, which includes the company "XY" is 0.54. Bearing in mind that the corporate tax rate in Serbia in 2011 was 10%, we obtain a value of coefficient β at 0.9476.

Market premium rate (MMR) is the additional premium that companies realize on the market by investing in riskier investments. It is obtained as the difference of the market and the risk-free rate of return:

$$MRP = \text{NetPf} / A * 100 - Rf, \quad (11)$$

Where: NetPf- net profit, A – total asset, Rf – return rate for government securities.

In 2010, the company "XY" realized net profit of 21.091 million of dinars, with total assets of 141.867 million. If, for the risk-free rate, we take the value of the rate of return on Treasury bills of old foreign currency saving, market premium rate (MRP) will amount to 9.6674%.

Based on these data, the cost of capital for the company "XY" after tax (WACCat) will amount to 12.95%. However, the calculation of inventory costs is performed before tax, so that the value of the cost of capital has to be corrected (Chopra, Meindl, 2004, p. 288):

$$WACC_{pt} = WACC_{at} / (1 - t), \quad [12]$$

The new value of the cost of capital before tax (WACCpt) is 14.39%. If it is increased by the amount of tax, we get the inventory holding costs (h), which amounted to 19.79% in 2011.

Unlike the cost of holding, ordering costs are fixed relative to the size of order. Based on data obtained from employees in commercial service, company "XY"'s cost of an order was 1,100 EUR, which was 111,100 RSD in 2011 (RZS, 2011).

Total costs (TC) are the sum of the cost of products purchased, the inventory holding costs and the cost of acquisition. It is calculated using the formula (Chopra, Meindl, 2004):

$$TC = N * C + n * S + Sa * hC, \quad (13)$$

Where: TC – total costs, N – quantity ordered, C – purchase price, n – number of orders, S – cost of ordering, Sa – average inventories, h – holding costs.

In the first eight months of 2011, the company "XY" has ordered products from their suppliers six times. On this basis, and given other data, we calculated the total inventory costs, presented in Table 5.

Table 5. Inventory costs of company "XY" in the first eight months of 2011 (in dinars)

Products	Cost of purchased products	Costs of holding inventory	Cost of ordering	Total costs
X1	10,112,400	258,558.7	666,600	11,037,558.7
X2	6,042,600	119,120	666,600	6,828,320
X3	3,288,600	135,420.6	666,600	4,090,620.6
X4	1,206,000	24,276.39	666,600	1,896,876.39
Total	20,649,600	537,375.7	666,600	21,853,575.7

In the company "XY", cost of products purchased in the first eight months of 2011 amounted to 20.6 million, the inventory holding costs to 537,375.7 dinars, and ordering costs to 666,600 dinars. Their sum gives the total inventory costs of 21.8 million. This way the company would save 478,252.6 rsd. Holding costs would be lower by 32,096.3 rsd, cost of purchased goods would be lower by 223,956 and the ordering costs by 222,200 rsd which is shown in the formulated hypotheses H1a and H1b.

4.4. Effects of the application of the optimal inventory management model

One of the goals of optimal inventory management model is to determine the order quantity (Q) at which the total inventory costs will be the lowest. Given that the company "XY" ordered products X1, X2, X3 and X4 from the same supplier, so each order can include all of these products, you first need to calculate the optimum frequency of ordering by the formula [3]. As the purchase prices of all products are equal, the calculation of this value is greatly facilitated.

If we analyze the data from the first eight months of 2011, the optimal number of orders would be 4.2. Applying "EOQ" model, the average order quantity (Q) would be 283,689 pieces bulbs. The inventory costs should have the following values: (1) cost of products purchased - 20,425,644 dinars; (2) ordering costs - 444,400 dinars; (3) inventory holding costs - 505,279.4 dinars; (4) total costs (sum of previous costs) - 21,375,323 din. In this way the company "XY" would save 478,252.6 dinars. The inventory holding costs would be lower for 32,096.3 dinars, cost of products purchased for 223,956 dinars and cost of ordering for 222,200 dinars.

In applying the "EOQ" model, we proceed from the assumption that the company can fully predict demand and order the required amount of products. However, due to the frequent changes in the market, trading companies hold a certain level of safety stocks. Holding safety stocks reduces uncertainty, but at the same time, with increasing the average inventories, costs of holding increase as well. The optimum size of safety stock can be obtained using the formula [6]. It is necessary first to calculate the appropriate "level of customer service" (CSL), using the formula [7] (in the example it is 0.838082). By entering safety stock into the equation [5], with the data on average daily demand and delivery time, we get a re-order point (ROP).

Table 6. Safety stock and re-order points

Products	Safety stocks (SS)	Re-order points (ROP)
X1	10,941.7208	32,408.262
X2	7,044.34725	21,031.764
X3	3,245.10362	12,066.187
X4	1,341.57016	4,348.1118
Total	21,160.6611	68,442.244

To provide some business safety and be able to meet its customers' requirements, the company "XY" should keep safety stock level of 21,160 units (of which 10,941 units of X1, 7044 units of X2, 3245 units of X3 and 1341 units of X4). New orders will follow when the inventory level drops to 68,442 pieces. The movement of inventory levels in given circumstances is presented in the next figure.

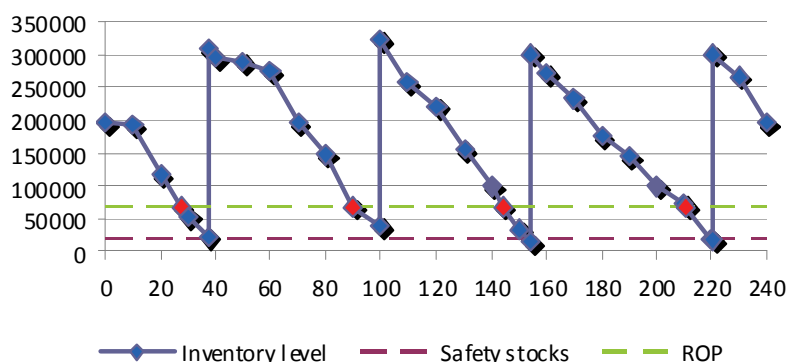


Fig. 2. Daily changes of inventory levels in 2011 caused by the application of "EOQ" model

After 27 days, the amount of 195,704 bulbs, transferred from 2010 would come down to a level of 68,442 units (ROP), and would then be followed by a new order of 283,689 pieces of bulbs (Q). During the ten days, which are necessary to deliver the ordered quantity, the inventories level dropped to 23,751 pieces. After receiving the delivery, the company would have 307,440 units of a product group "X". New orders would follow in 90, 144 and 211 days, when the inventories level gets back down to 68,442 pieces. In all three cases, before the delivery of goods, supplies would not go below the level of 15,000 units (38,242 100 day, 154 days of 15,404 and 221 days of 15,565 pieces). In this way, the safety stocks dampen volatility on the demand side, preventing possible lack of products. Cost of inventories that occurred in the period, are presented in Table 7.

Table 7. Costs of inventories in the company "XY" due to establishment of safety stock levels in 2011

Products	Average inventories	Cost of purchased products	Cost of ordering	Inventory holding costs	Total costs
X1	76,138	9,388,404	444,400	271,222	10,104,026
X2	49,423	6,102,648	444,400	176,057	6,723,106
X3	28,493	3,635,766	444,400	101,499	4,181,665
X4	10,361	1,298,826	444,400	36,908	1,780,135
Total	163,005	20,425,644	444,400	580,657	21,450,702

If safety stocks are established at a level of 21,160 units, the total cost in the first eight months of 2011 would amount to 21,450,702 dinars, which is 402,874 dinars less than the realized value at a given time. Costs of ordering and costs of purchased products would be lower by 222,200 and 223,956 dinars, respectively. However, the cost of holding would amount to 580,657 dinars, which is higher than the realized value of 43,281 RSD. Even with the higher holding costs, when establishing the certain level of safety stock, trading company „XY“ achieves lower total inventory costs with lower investments in the reporting period, which confirms the first two hypotheses.

With the objective of eliminating one of the main disadvantages of the cost approach (neglecting the time value of money), one should include the net present value concept in the stock management analysis. Cash flows in both alternatives are discounted and compared. Afterwards, the alternative with the higher net present value is chosen. Due to the inaccessibility of certain data, the analysis contains the limited number of inflow and outflow data. The cash outflows, in addition to cash payments for the purchase of the product, including the ordering costs. The investments regarding the cost of holding are not included in the analysis due to the nature of their calculation. On the other hand, most of the cash inflow is consisted of the income of the imported goods sale (selling price excluding VAT is 20 rsd).

In calculating cash flows, it is necessary to take into account the average receivables collection period, and the average maturity of obligations to suppliers, which in the present case are 20 and 10 days. The only liability in connection with the delivery of the product must be reconciled with maturity orders. In calculating the net present value for the discount rate was taken active weighted interest rates on loans in dinars, which in 2011 amounted to 12.82% (RZS, 2011).

Table 8. Net present value of different cash flows in company "XY"

	Differential cash flow	Current cash flow
Present value of cash inflows	21,688,473	21,653,322
Present value of cash outflows	19,929,057	20,357,635
Net present value	1,759,416	1,295,687

Based on the results shown in Table 8, net present value of the differential cash flow is greater than the current cash flow by 463,729 RSD. In this way we confirmed the H2 hypothesis, as alternative policy inventory management seems acceptable.

CONCLUSION

One of the main objectives of the trading company is to meet the needs of its customers, and to adapt the offer to their requirements. In order to achieve these objectives and ensure business continuity, commercial company must hold a certain level of inventories. Otherwise, apart from the loss of potential incomes, it can also have a negative impact on reputation. However, from the financial aspect, the holding and acquisition of inventories cost, and it must be taken into account in various business decision makings. Also, despite the extra cost, it is necessary to establish a certain level of safety stocks in order to avoid the situation of their deficiencies. Answers to these questions are provided by the model of "optimal inventory management." Balancing between different categories of inventory costs, it is possible to determine, using the given model, the amount of optimal orders, the re-order points, as well as the optimal level of safety stocks in the company. Applying this model in case of the trading company "XY" would lower the total inventory costs by 1.88%. Ordering costs would be reduced by 30%, the inventory holding costs increased by 7.45%, but it would significantly reduce investment in inventories.

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FINANSIJSKE POSLEDICE UPRAVLJANJA ZALIHAMA U TRGOVINSKIM PREDUZEĆIMA - EOQ MODEL

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Efikasno upravljanje finansijama trgovinskih preduzeća odnosi se na stalno preispitivanje neophodnosti investiranja u bilo koji od vidova poslovnih sredstava. Stoga, treba pažljivo pratiti i kontrolisati zalihe, koje često podrazumevaju velike gotovinske investicije. Poseban akcenat je stavljen na troškove koji proizilaze iz njihovog postojanja. Na osnovu analize troškova u vezi sa nabavkom i držanjem zaliha, trgovinska preduzeća donose različite odluke u pogledu veličine porudžbine i trenutka poručivanja. Primena različitih modela, uključujući model "optimalnog upravljanja zalihama", može značajno olakšati proces donošenja odluka. Analiza u ovom radu se odnosi na efekte primene EOQ modela (ekonomična količina poručivanja) na optimizaciju zaliha preduzeća "XY". Analiza je pokazala da postoji ekonomska motivacija za primenu ovog modela, jer ona značajno smanjuje troškove zaliha, što doprinosi ukupnoj profitabilnosti. Primenom ovog modela u slučaju trgovinskog preduzeća "XY", ukupni troškovi zaliha bi bili smanjeni za 1,88%. Troškovi poručivanja bi bili smanjeni za 30%, troškovi držanja zaliha bi bili povećani za 7,45%, ali bi investiranje u zalihe bilo značajno smanjeno.

Cljučne reči: troškovi držanja zaliha, troškovi poručivanja, sigurnosne zalihe, EOQ model.