

INVENTORY VALUATION METHODS AND THEIR IMPACT ON THE COMPANY'S PROFIT GENERATION

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Abstract: Inventories are the assets of a company and creates her value. In this paper, we will deal with the most commonly used methods of inventory valuation (FIFO, LIFO, AC) and we will point out their impact on the company's profit generation. Confirmed hypotheses presents state that Slovak production companies use the FIFO method for valuing inventories and they have the most common type of inventories: finished products. Based on the results of inventory valuation using FIFO, LIFO, AC methods, we can state that the best results are shown by the FIFO inventory valuation method, because it realistically shows the price of inventories, which inventories are valued when consumed for consumption and corresponds to the price of inventories when acquiring € 8175. In the area of inventory value, it would be appropriate to introduce a simulation tool in the inventory management in companies, which would model the results of inventory valuation by individual methods.

1 Introduction

The decision on the method of valuing inventories should be based on economic efficiency, which is linked to profit generation. The main goal of this paper, we will deal with the most commonly used methods of inventory valuation and we will point out their impact on the company's profit generation.

Inventories are a type of current assets that significantly affect the company's financial results and profit generation [1]. In practice, inventory valuation is linked to the Accounting Act Law 431/2002. In many cases, companies do not address inventory valuation of individual types of inventories but follow the valuation method that suits them best or is set out in the company within the framework of the Internal inventory valuation directive. Inventories represent the assets of an enterprise which, given the purpose for which they were acquired, are not of a long-term nature [2]. Their optimal size ensures the success of production and business activities. When deciding how much and what supplies are needed for the efficient course of business activity, the decisive factors are e.g. the size of the company, the type and scope of its activities, technological processes of production, the situation on the market of raw materials and other factors [3]. Inventories create raw material inventories - material, raw materials, components - WIP - work in progress, spare parts, fuels, MRO goods - service etc., inventories of own production - work in progress, semi-finished products of own production, finished products, animals, supplier inventories - goods [4]. All these forms of inventory must be valued in the company at their consumption. Businesses decide which method of valuing inventories they choose.

2 Literature review

Li, YC, Liu, ZK. (2014) commented that selecting the inventory valuation method plays an important role in accounting in the firm. Different inventory valuation methods will impact profit and inventory, according to accounting standards there are several inventory valuation methods. The firm must be able to consider the actual situation, choose the most suitable method of inventory valuation [5]. Inventory processes are very difficult in the companies and exist some inventory problems in the companies, that are is needed to solve. Utami et al. (2018) have solved the problems exist in the leasing of photocopy machines which are recording incoming goods data, the data of goods being leased, and data about the quality of goods in storage. The system of evidence of goods has not been managed properly and the absence of an integrated system slows data sharing process the loss data, or data redundancy. The method of inventory recording of goods used is FIFO. Design of new system of evidence is able to improve the implementation of performance to be more effective, faster, good, safe and meet the needs of the company [6]. Behunova et al. (2020) presented that the inventory valuation is a part of production costs that are important to optimize, because their influence is on the selling price of product. In order to achieve a competitive price of the product, it is necessary to know not only the market but mainly the production costs that influence profit generation. Production costs form the largest part of the sales price of the product, it is important for the manufacturing company to monitor costs so that the price of the product is competitive in the domestic or foreign market [7]. Cost of production create costs of consumption of inventory and using of relevant method of inventory

INVENTORY VALUATION METHODS AND THEIR IMPACT ON THE COMPANY'S PROFIT GENERATION

Katarína Teplická; Andrea Seňová

valuation (FIFO, LIFO...) and new inventory evidence is important [8]. Regularly control of the costs have to use a suitably chosen implementation management logistics, which is currently a progressive tool of business development and competitiveness instrument in all companies and mostly in SMEs [9]. Le, HE. et al (2019) are describing using of inventory value methods is very important in various areas of industry. In chemical industry treatment methods and types differ depending on their physicochemical properties. In the paint manufacturing plant, storage, weighing, and mixing processes should be used emission model method to estimate. Those methods are connected with the inventory valuation methods and they influence profit generation [10]. Lara (2018) in her chapter of the book describe inventory valuation methods and their significance in area of income tax. Inventory create a part of asset in the firm and inventory value are very important for taxes payment. The most using methods of inventory valuation is method FIFO and AC. In the area of decreasing base of taxes, the firms are using method LIFO. By this method, the firms presented not relevant information about state of assets. Method LIFO is not punctual for inventory valuation [11]. Very important for evidence of inventory is reporting system that can be part of accounting system or management business system [12,13]. The value of inventory affects the price of the product to the customer and the price of the product on the market. This reason is base for inventory management in companies [14,15].

3 Methodology

Valuation of inventories at consumption is based on methods (Figure 1) such as FIFO (first in - first out), LIFO (last in - first out), AC (average cost; average cost; weighted arithmetic average). In addition to these basic methods of valuing inventories, we also know other methods that are less common in practice, e.g. HIFO method - (Highest In - First Out) (the highest price is used to assess the decrease in inventories, the value of the most expensive inventories), LOFO method - (Lowest In - First Out) (the lowest price is used to assess the decrease in inventories, the value of the cheapest inventories), NIFO - (Next In - First Out) method.

Each of the methods of valuing inventories has its advantages and disadvantages and companies have the right to choose a specific method, which affects the company's costs in valuing inventories and opportunities for customers [16]. Costs significantly contribute to the creation of the company's profit. From this point of view, it is important to optimize the level of inventory costs. Inventory optimization is possible with a large number of different types of inventory in the company and with different inventory prices. The most frequently used valuation methods of inventories within the operational management of inventories are the FIFO, LIFO, AC methods. FIFO method is an valuation method in which assets produced or acquired first are sold, used, or disposed

of first. For tax purposes, FIFO assumes that assets with the oldest costs are included in the income statement's cost of goods sold (COGS) [17].

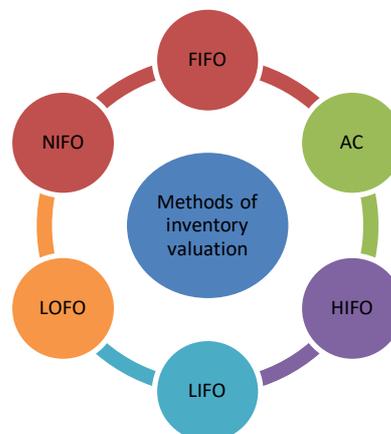


Figure 1 Methods of inventory valuation

The FIFO method follows the logic that to avoid obsolescence, a company would sell the oldest inventory items first and maintain the newest items in inventory. Although the actual inventory valuation method does not need to follow the actual flow of inventory an entity must be able to support why it selected the use of a particular inventory valuation method [18]. The inventory valuation method opposite to FIFO is LIFO, where the last item purchased or acquired is the first item out. In inflationary economies, this results in deflated net income costs and lower ending balances in inventory when compared to FIFO [2]. Method - (AC) The average cost inventory method assigns the same cost to each item. The average cost method is calculated by dividing the cost of goods in inventory by the total number of items available for sale. This results in net income and ending inventory balances between FIFO and LIFO. This method is base for using stochastic optimization models in praxis and decrease inventory that inventory bind money in companies [19].

4 Results of research

As part of the project of inventory optimization in companies, we implemented a research questionnaire. The sample for the elaboration of the questionnaire consisted of 1560 companies from the field of industry with a focus on industry: mining, engineering, automotive, metallurgy, construction, energy in Slovakia. From the implemented questionnaire, we used two questions that we need for the area of inventory valuation in companies and the selection of a suitable method of inventory valuation and its impact on the company's profit generation. We established two basic hypotheses that we needed to verify through questionnaire questions.

H1: The most commonly used method for valuing inventories is the FIFO method.

INVENTORY VALUATION METHODS AND THEIR IMPACT ON THE COMPANY'S PROFIT GENERATION

Katarína Teplická; Andrea Seňová

H2: The most frequently valued type of inventories is finished goods.

The results of a research questionnaire with a sample of 1560 companies from the various industries pointed to the most frequently used method of valuing inventories in companies.

Hypothesis H1 was confirmed. H1: The most commonly used method for valuing inventories is the FIFO method (Figure 2). 660 companies are using method FIFO of inventory valuation that means 42% of selected companies. Method FIFO is very easy, effective and is accepted by Accounting Law 431/2002 in Slovakia.

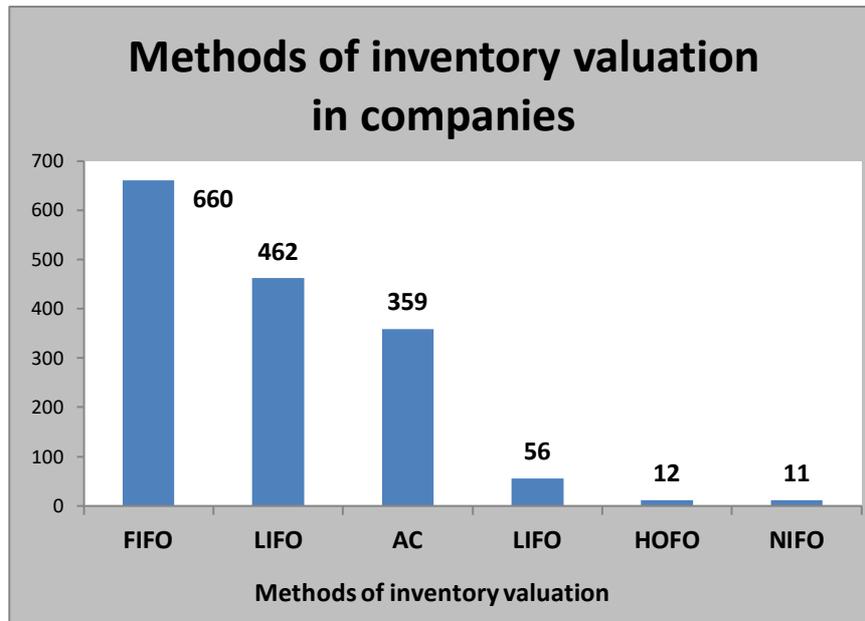


Figure 2 Using of methods of inventory valuation in companies

The results of a research questionnaire with a sample of 1560 companies from the various industries pointed to the most frequently valued type of inventory is finished goods.

The most frequently type of inventory was finished goods for 621 companies that mean 40% of selected companies (Figure 3). This conclusion points to direct using of finished goods for business and sale.

Hypothesis H2 was confirmed. H2: The most commonly valued type of inventory was finished goods.

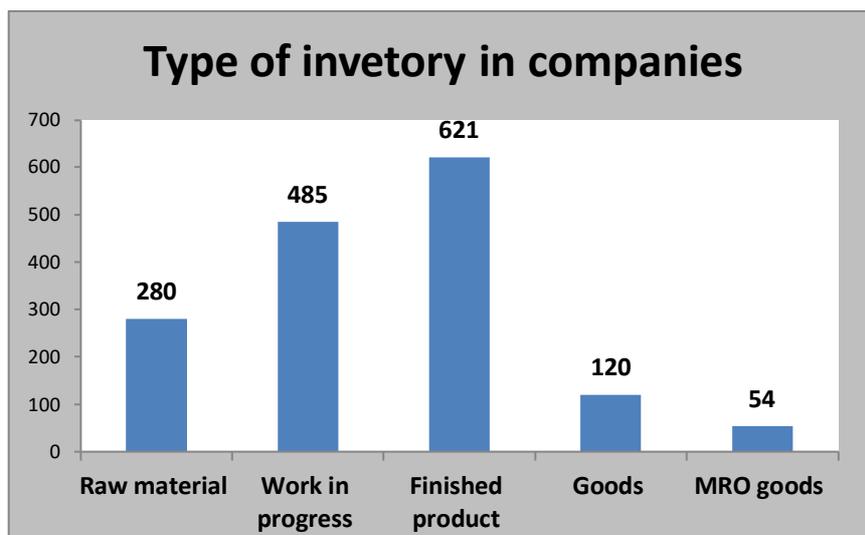


Figure 3 Most often type of inventory in companies

INVENTORY VALUATION METHODS AND THEIR IMPACT ON THE COMPANY'S PROFIT GENERATION

Katarína Teplická; Andrea Seňová

On the base of two hypothesis we can confirm that: 42% of selected companies use method FIFO of inventory valuation that is very easy, effective and is accepted by Accounting Law 431/2002 in Slovakia, and the most frequently type of inventory were finished goods [20]. 40% of selected companies are using this type of inventory for business and sale and create profit in the companies. Conclusions of the questionnaire survey we will value inventories using the FIFO method for the finished product. We will also point out the use of the LIFO and AC methods and significance of those methods for profit generation in the companies. As part of the decision-making process on the form of valuing inventories in companies, it is important to monitor the impact of the

method used on the amount of the company's profit. We calculated the value of inventory costs according to selected methods - FIFO, LIFO and AC. The sales plan assumes 750 pieces of finished products, so we determined the amount of costs for a given number of finished products by individual methods.

FIFO method is an accounting method. FIFO assumes that the remaining inventory consists of items purchased last. An alternative to FIFO is LIFO method. LIFO is an accounting method in which assets purchased or acquired last are disposed of first. The calculation of the price of finished goods by method FIFO in the amount of 750 pieces is in table 1.

Table 1 Valuation of inventory by method FIFO [11]

FIFO	Increase			Decrease			Balance		
	ks	€/ks	€	ks	€/ks	€	ks	€/ks	€
Initial state							200	10	2000
Increase (300)	300	11	3300				200	10	2000
							300	11	3300
Decrease (400)				200	10	2000			
				200	11	2200	100	11	1100
Increase (400)	400	11,5	4600				100	11	1100
							400	11,5	4600
Decrease (350)				100	11	1100			
				250	11,5	2875	150	11,5	1725
Final balance				750		8175	150		1725

LIFO method is an accounting method. This method used to account for inventory that records the most recently produced items as sold first. The cost of the most recent products purchased (or produced) are the first to be

expensed as cost of goods sold (COGS)—which means the lower cost of older products will be reported in items costs. The calculation of the price of finished goods by method LIFO in the amount of 750 pieces is in table 2.

Table 2 Valuation of inventory by method LIFO [11]

LIFO	Increase			Decrease			Balance		
	ks	€/ks	€	ks	€/ks	€	ks	€/ks	€
Initial state							200	10	2000
Increase (300)	300	11	3300				300	11	3300
							200	10	2000
Decrease (400)				300	11	3300			
				100	10	1000	100	10	1000
Increase (400)	400	11,5	4600				400	11,5	4600
							100	10	1000
Decrease (350)				350	11,5	4025	50	11,5	575
							100	10	1000
Final balance				750		8325	150		1575

Average cost method (AVCO) calculates the cost of ending inventory and cost of goods sold for a period based on weighted average cost per unit of inventory. AVCO is applied differently in periodic inventory system and

perpetual inventory system. In periodic inventory system, weighted average cost per unit is calculated for the entire class of inventory. It is then multiplied with number of units sold and number of units in ending inventory to arrive

INVENTORY VALUATION METHODS AND THEIR IMPACT ON THE COMPANY'S PROFIT GENERATION

Katarína Teplická; Andrea Seňová

at cost of goods sold and value of ending inventory, respectively in perpetual inventory system, we have to calculate the weighted average cost per unit before each

sale transaction. The calculation of the price of finished goods by method AC in the amount of 750 pieces is in table 3.

Table 3 Valuation of inventory by method AC [11]

	Increase			Decrease			Balance		
	ks	€/k _t	€	ks	€/k _t	€	ks	€/k _t	€
Initial state							200	10	2000
Increase (300)	300	11	3300				500	10,6	5300
Decrease (400)				400	10,6	4240	100	10,6	1060
Increase (400)	400	11,5	4600				500	11,32	5660
Decrease (350)				350	11,32	3962	150	11,32	1698
Final balance				750		8202	150		1698

Based on the valuation methods used, we can state that for the same amount of issued inventories, the valuation in the item of costs is different (Figure 4). The lowest value of inventories is in the FIFO method; on the contrary, the highest value of costs is reflected in the LIFO method. For the values of the final balances of finished products, the cost value is highest for the FIFO method and lowest for the LIFO method. The LIFO method increases the cost

item, which may be reflected in the reduction of the tax base, which is prohibited for business in Slovakia. Businesses can use the FIFO and AC method, which realistically measures inventories in consumption. The highest value of inventories that remain in the warehouse is presented by the FIFO method, which is important for the company because inventories are the property of the company that the company owns.

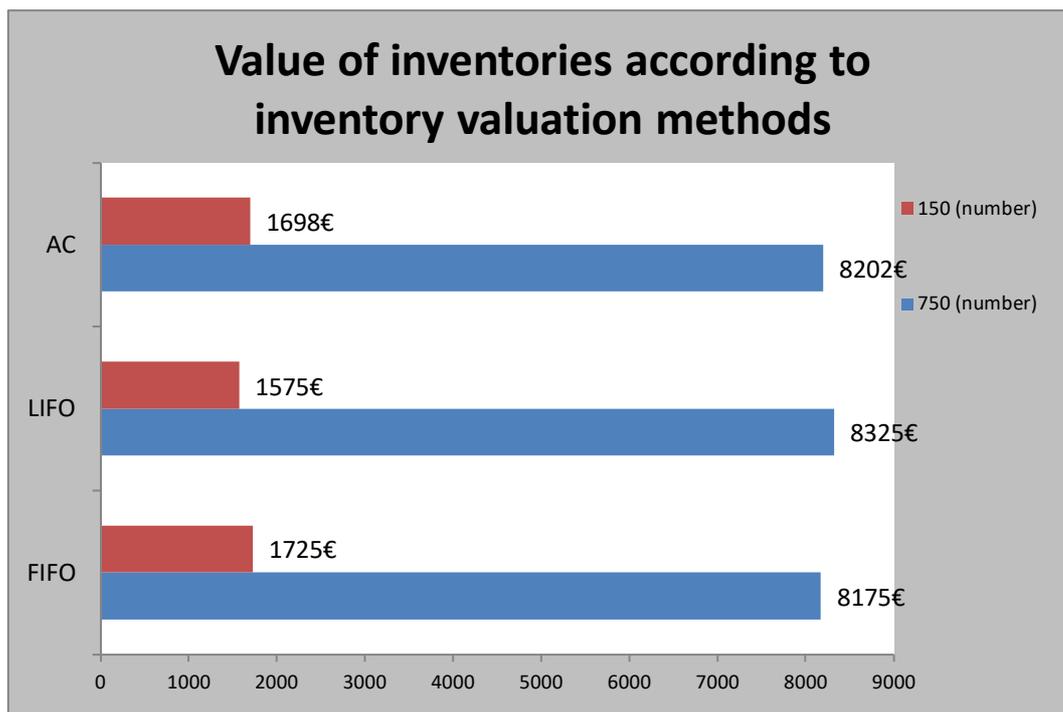


Figure 4 Results of valuation of finished goods

5 Discussion

All of authors in this article described to significance of inventory value methods. Their opinions were confirmed with the results of research. Li, YC, Liu, ZK, (2014) commented that selecting the inventory valuation method plays an important role in the firm [5]. Different inventory valuation methods will impact profit. This fact is presented

in table 4. Utami et al. have solved the problems exist in the leasing of photocopy machines the method of inventory recording of goods used is FIFO, where the goods enter the first then the goods are issued first [6]. This method was used in research. Behunova et al. presented that the inventory valuation is a part of production costs that are important to optimize, because their influence is on the

INVENTORY VALUATION METHODS AND THEIR IMPACT ON THE COMPANY'S PROFIT GENERATION

Katarína Teplická; Andrea Seňová

selling price of product. In order to achieve a competitive price of the product, it is necessary to know not only the market but mainly the production costs of the company that influence profit generation [7]. This fact is presented in table 4 and in figure 4. Le, HE. et al. are describing using of inventory value methods is very important in various areas of industry in industrial chemicals differ in their treatment methods and types, depending on their physicochemical properties [10]. We can use this method FIFO in various industries. Lara in her chapter of the book describes inventory valuation methods and their significance in area of income tax. When the firm create high costs than have lower profit and pay lower taxes [11].

We investigated the impact of inventory valuation on the company's financial results (table 4) in determining the consumption of inventories at 750 pieces, the selling price of which was set at € 15. Revenues for all methods were the same, only the item of inventory costs changed, which we determined on the basis of three methods for valuing inventories (FIFO, LIFO, AC). We determined the operating costs fixed for all three methods. We found that when valued using the FIFO method, the company achieves the highest economic result in the form of a profit of € 875. With this simplified calculation of profit, we can see that the choice of the method of valuing inventories can ultimately affect the amount of the company's profit. When setting the valuation method, companies must take into account changes in the prices when acquiring inventories, which will reflect the changes in valuation more significantly and the more significant impact it will have when using individual methods.

Table 4 Generation of profit in company

Indicator/Method	FIFO	LIFO	AC
Revenue (750 ks finished goods x price 15€)	11 250	11 250	11 250
Costs / Decrease of inventory (750 ks finished goods)	8175	8325	8202
Operating costs – fixed	2200	2200	2200
PROFIT	875	725	848

6 Conclusions

Inventories create the assets of all companies and therefore their value is important. Based on the confirmed hypotheses, we can state that Slovak companies use the FIFO method for valuing inventories and at the same time have the most common type of inventories of finished

products that are realizable on the market by selling and obtaining financial resources to purchase new inventories. The result of the calculation of the inventory price showed the highest value of stocks in the warehouse using the FIFO method in the amount of € 1,725. Based on the results of inventory valuation using FIFO, LIFO, AC methods, we can state that the best results are shown by the FIFO inventory valuation method, because it realistically shows the price of inventories, which inventories are valued when consumed and corresponds to the price of inventories when acquiring € 8175. The choice of the appropriate method of inventory valuation is the responsibility of each company and therefore it would be appropriate to introduce a simulation tool in the inventory management in companies, which would model the results of inventory valuation by individual methods and the highest profit share would be a criterion for choosing the appropriate method. In conclusion, we can confirm that the FIFO method is a method that in Slovakia realistically expresses the consumption of stocks and the final state of stocks in the warehouse as assets of the company. Using of this method FIFO is possible in various types of industries; it is method for profit influence that is important for business.

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INVENTORY VALUATION METHODS AND THEIR IMPACT ON THE COMPANY'S PROFIT GENERATION

Katarína Teplická; Andrea Seňová

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