INFLUENCE OF LOGISTICS ON PROFITABILITY OF COMMERCIAL COMPANIES

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Abstract

The organization of logistics in commercial companies has a huge impact on their financial results. However, it is very often associated with high costs. The problem in the management of logistics costs is the lack of information in the financial statements on logistics costs. These costs are included in the form of control accounts which are presented in the income statement. Therefore, in order to know the cost of logistics in the enterprise and manage them, it is necessary to use additional accounts. With information on the cost of logistics in a given period one can enter the appropriate solutions that will lead to their optimization. Effective management of costs and their reduction in various areas of companies management will have a positive impact on one of the most important indicators for assessing the activities of the company, which is profitability. Profitability is the basic information about the business operation. This article aims to show the impact of logistics on the ability of businesses to generate profit.

Keywords: Logistics, costs, profit, profitability

1. PROFITABILITY OF COMPANIES

While assessing operations of companies, several different indicators are applied. However, when we want to get information about the profitability of these operations the managers take into account the profit. Comparing only the amount of profit over the years provides general information about the profitability of business conducted. The group of indicators which provides more analytical information are profitability indicators. Profitability ratios allow to measure the efficiency of business operations by reference of profit to sales, assets, and equity contribution. The profitability analysis is considered one of the most important because [1]:

1. It indicates the degree of multiplication of capital owners,

2. It expresses the function of the company, which all other areas of activity such as liquidity and performance should agree with,

3. It enables to demonstrate the factors affecting the value for the owners.

Profitability analysis is carried out in three areas. For this purpose, the indicators on sales profitability, assets and capital are used. Return on sales ratio tells how big profit is generated by a single PLN of revenue. It is one of the most important indicators for the assessment of the effectiveness of business management.

Return on assets provides information how much profit is attributable to the assets of the entity involved. It is a tool that provides information about the effectiveness of the use of assets. It determines the ability of the company's assets to generate profit. Factors determining the rate of return on assets are shown in Fig. 1.

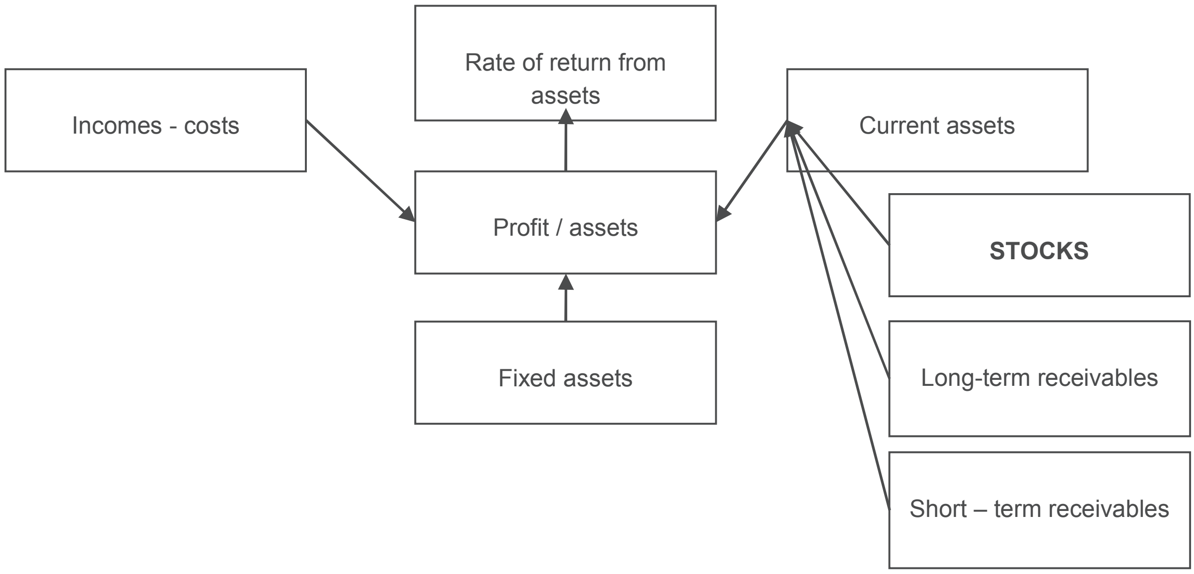

Fig. 1 Factors which influence on assets profitability

In the case of the return on assets, by assessing its value, the level of inventories should be noted in addition to the cost of logistics. In this case strategies and methods affecting the level of stock will greatly affect the level of this ratio.

Return on equity tells us how much profit is generated by a single PLN of equity. It is important for business owners because it provides information what profit generates the capital invested by them. The results of the above mentioned indicators affected profit, i.e. the difference between revenues and costs. Logistics management is an area that generates costs. Their reduction and optimization will have a big impact on profit and on individual results on profitability of companies.

2. LOGISTIC COSTS

The Accounting Act defines costs as "probable decrease in the reporting period of economic benefits of a reliably determined value, in the form of a reduction in the value of assets or increase of liabilities and reserves that will lead to a decrease in equity or an increase in a different way than the withdrawal of funds by shareholders or owners "[2]. Logistics costs are a key quantitative measure of efficiency and modernity of logistics processes [3]. Therefore, the detailed records and systematic control are very important.

Costs of logistics are also referred to as logistics costs. They can be defined as "... expressed in money the consumption of human labor, resources and objects of labor, financial expenses and other negative effects of the extraordinary events that are caused by the flow of material goods (raw materials, materials, products, goods) in the company and between companies as well as maintaining inventory" [4].

In the literature there are many criteria for allocating the costs of logistics. One of the most popular divisions of logistics costs is a division of the basic components of logistics processes into three groups:

- the cost of the physical flow,
- inventory costs,
- the costs of information flows.

The costs of the physical flow of supplies are a very important category of logistics costs. They are shaped mainly by the following components: the cost of depreciation, labor costs, costs of materials, fuels and energy, other costs of flow, e.g. property tax, tax on means of transport:

Costs of material flow apply to all three phases of flow, i.e. the purchase, production and distribution. Mainly they cover costs of external transportation (foreign services) and the internal ones.

The costs of inventory management are a key element of logistics costs. They usually have the largest share in overall logistics costs. The cost of inventories is determined by inventory management costs resulting from activities which are associated with inventory so their creation, maintenance and exhaustion [5]. Most often this group of costs is divided into the cost of creating, maintaining and while stocks last.

The first group are costs associated with the creation of inventories. It covers the costs of creating the physical inventory and the cost of information processes related to the purchase of materials, goods, products. The information inventory costs include: the costs of vendor selection, order preparation costs, costs of negotiation, order preparation costs [3]

The second group are costs of maintaining stocks. In this group managers can gain most by introducing appropriate inventory management methods leading to their optimization. Sales forecasts have the most important influence in this group, which translates into inventory levels, which in turn affects the costs. The most expensive element in this group are different storage costs.

The last group of the costs of inventory management are costs while stocks last. They express the loss of benefits that the company would incur as a result of a lack of supplies at a time when the customer needs them. Otherwise, these are the costs of lost profits, which the company could achieve if they possessed the appropriate inventory in the right place and the right time [5].

The costs of information processes can be further classified according to two criteria. According to the place of origin and by type. In the case of a division into where they arise one should identify the following groups [4]: costs of purchase information processes, costs of production information processes, information processes distribution costs.

Additionally, in order to improve the management of logistics costs a detailed accounts system should be implemented into records and cost control. Sample solutions for detailed accounts were presented in the table below:

Table 1 Typical plan of accounts group no.4 taking into account detailed accounts for logistics costs

Control accounts	Main detailed account
Depreciation	Depreciation of transport, depreciation of other equipment and logistics buildings
Materials and energy consumption	Consumption of logistics materials, fuel consumption energy consumption for the logistics needs
External services	Transport, loading and unloading, leasing, telecommunications services, repair services, car wash
Salaries	Salaries for drivers, warehouse workers salaries, mechanics and other logistics employees
Social insurance and other social benefits	Insurance and benefits for drivers and other logistics staff, e.g. social insurance, training, expenditure on health and safety
Taxes and fees	Taxes on means of transport, property taxes on logistics, environmental protection fee, stamp duty, other charges
Other costs	Insurance, business trips, advertising, other costs

Source: own research

The use of detailed accounts presented above will facilitate the process of logistics cost control and will allow for the distribution of logistics costs among the various groups and determining of the structure and trends.

3. LOGISTICS VS. PROFITABILITY

There are many definitions of logistics. J. Szołtysek proposes the following definitions: "Logistics is shaping (as a kind of logistics management) of material and information flows in order to achieve accessibility (to tangible or places) on the agreed terms and priorities for action" [6]. According to another definition logistics is organizing, planning, control and execution of flows of goods from their inception and purchasing through production and distribution to the end user in order to meet market requirements while complying with minimum cost and minimum capital expenditure [7].

Thus, logistics will have an impact on costs and profit. The influence of organization of logistics on costs will depend on the industry in which the entity operates. [8] Logistics in a company should be organized in such a way as to minimize the costs associated with its functioning and to ensure continuity of production and sales. To do this, it is necessary to use appropriate control strategies of inventory, classification of product groups and various types of methods to optimize inventory levels. These solutions should influence on the reduction of costs. All systems related to the organization of logistics are expensive. However, the benefits that have brought should lead to lower costs in the future, and to ensure the continuity of sales, production [9] No stagnation, interruptions in the sales process, and production have a positive effect on the level of sales [10]. Revenues other than the costs are the second most important elements shaping the profit and hence the profitability of companies. When analyzing the impact of logistics on the profitability of companies the evaluation should be provided in three areas of profitability of sales revenue, assets where the impact is visible and direct and in the case of equity. In the latter case, there is a minimal indirect impact of logistics on equity. The analysis of this kind should be carried out for three inventory management strategies because they have the greatest impact on logistics costs. Inventory management strategies can be divided into three types: conservative, moderate and aggressive. Charges in the conservative strategy are high. They result from storing large amounts of inventory in warehouses. Very often they exceed safety stock. Costs related to flows are also high. They result from the organization of supply. On the other hand, costs relating to information processes should be considered as fixed ones.

While pursuing the conservative strategy with increasing sales volume it should be considered that in the group of information costs their decline will be visible. Costs related to the purchase of programs and amortization will be decomposed into multiple spreadsheets position. In the case of an aggressive strategy the stocks are low. This system of management in case of flows will generate low costs. Companies which are run in this way have a small logistics base. The costs of information processes will be high. Low inventories and high turnover will require appropriate information systems, and a large group of specialized staff to control the logistics processes in the company. The key to the success of this type of management is to avoid a situation causing cessation of sales or production due to shortages. In the case of lack of any system of orders control and inventory levels in this type of strategy there will come the opportunity costs which negatively affect sales and revenues. This strategy is an intermediate one between conservative and moderate. Logistics costs in this case are at a medium level.

In 2014 in order to identify the strategy of inventory management performed by companies, research was held among 22 trading companies operating in sanitation and heating technology sector. The very analysis was based on evaluation of a structure of current assets, as well as ratios of current assets turnover and financial liquidity. It allowed to describe, for each of the companies, adequate strategies of inventory management. Finally, the level of logistics costs was measured for selected companies. The details are presented in table 2.

Table 2 Infulence of strategy of inventory management on profitability

Strategy of inventory management	Flows costs	Inventory costs	Information processes costs	Revenues on sales
Conservative	High	High	Low	High
Aggressive	Low	Low	High	Low
Moderate	Medium	Medium	Medium	Medium

Source: own research

In the case of conservative strategy almost all of the companies evaluated the flows and inventory costs as high, whereas the ones of information processes as low. For two instances of companies the costs were estimated as medium. In the case of aggressive strategy the results were consistent, while for moderate strategy the logistics costs were specified as medium. Sales revenues increased in all of the considered companies as compared to 2013. However, considering the assumptions imposed on companies by particular inventory management strategies, the following is expected: significant increase in revenues level in the case of conservative strategy, medium for moderate strategy, and either decrease or slight increase in revenues for companies performing aggressive strategy. In the case of a conservative strategy its impact on revenues is high, if there is a rapid rotation of inventories. In the case of low inventory turnover conservative strategy has no negative impact on sales revenues [11]. Referring to the results contained in table 1 it can be determined how the various strategies have an impact on the level of profitability of companies. The details are presented in table 3.

Table 3 Influence of strategy of inventory management on logistic costs and revenues.

Strategy/profitability	Sales profitability	Assets profitability	Equities profitability
Conservative Strategy	Low	Low	Medium
Aggressive Strategy	Low	Medium	Low
Moderate Strategy	Medium	Medium	Medium

Source: own research

The considered companies do not use detailed accounts created for logistics to implement costs records. It impedes the analysis of logistics costs. Based on realized research and analyses, it may be concluded that in the case of conservative strategy related to maintaining high levels of security stocks, the costs of its performing are high. They are on many occassions unjustified, which always affects the profit negatively and results in low profitability in such companies.

In the case of aggressive strategy, whose aim is to lower stocks levels in order to reduce costs, profitability may be low, as well. It results from the problems occurring in this kind of strategy. Lack of liquidity, costs of lost opportunities, orders problems, high level of supervision - all these contribute to increased costs. For all companies not affected by the above problems, profitability in the three areas will be high. However, in practice such result is difficult to achieve.

Performing moderate strategy may contribute to various levels of profitability ratios depending on how much it is based on conservative or aggressive one. All in all, they may be described as medium levels.

4. CONCLUSIONS

When analyzing the results of tables 2 and 3 one should point out that the best solution for activities and processes related to logistics is a strategy of indirect inventory management. Its impact on profitability is the highest. The conservative strategy without the use of methods that would manage to bring to the optimization of inventory levels will be associated only with high costs. Even at high revenues the profitability in that case will be low. Aggressive strategy will lead in the long term to stop production and sales which will reduce revenue. This will have a negative impact on profits and profitability. If lost opportunities for sales do not show up for the profitability of this strategy will be high. Low inventory levels will enable to reduce costs and improve the efficiency of management. It will impact on the profitability of assets in a positive way. This situation will continue until the problems with sales appear. On the other hand, moderate strategy should deliver the best results if it uses the best solutions coming from the conservative and aggressive strategy.

REFERENCES

[1] WĘDZKI D. Analiza wskaźnikowa sprawozdania finansowego. Wolters Kluwer, Warszawa, 2009.

[2] Act of 29 September 1994 on Accounting (Journal of Laws of 2013., No. 47, item. 330, as amended).

[3] TWARÓG J. Koszty logistyki przedsiębiorstw. Biblioteka Logistyka, Poznań, 2003.

[4] SKOWRONEK CZ., SARJUSZ-WOLSKI Z. Logistyka w przedsiębiorstwie. PWE, Warszawa, 2003.

[5] KARMAŃSKA A. Zarządzanie kosztami jakości, logistyki, innowacji, ochrony środowiska a rachunkowość

[6] Finansowa. Difin, Warszawa, 2007.

[7] SZOŁTYSEK J. Pryncypium logistyki. Logistyka, Vol 1, 2015, pp.72-73.

[8] KRAWCZYK S. Logistyka teoria i praktyka t.1, Difin, Warszawa, 2011.

[9] MALINDŽÁK D., ZIMON D. The basic principles of the analyses for heuristic model creation in metallurgy. Im METAL 2014: 23rd International Conference on Metallurgy and Materials, Brno, TANGER, 2014, pp. 1438-1444.

[10] ZIMON D. Impact of the implementation of quality management system on operating cost for small and medium-sized business organizations affiliated to a purchasing group. International Journal for Quality Research, Vol 9, No 4, 2015, pp. 551-564.

[11] ZIMON G. Wpływ logistyki na sytuację finansową przedsiębiorstw. Logistyka, No, 4, 2015, pp.7058-7059.

[12] ZIMON G. Wpływ strategii zarządzania zapasami na wyniki finansowe przedsiębiorstw. In Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu nr 399 (red.) E. Nowak, P. Bednarek, Wrocław, 2015 pp. 500-501.