

ACTIVITY-BASED COST ALLOCATION AND FUNCTION ANALYZES IN TRADE

TÜNDE VERES *

ABSTRACT: *In this paper the author is thinking about the efficiency analyzes of trading. The most important evaluation factors of trade are the sales value, volume and the margin. Of course the easiest and fastest way is to follow the market situation by the turnover but for long term thinking the sales companies need to concentrate also for efficiency. Trading activity has some functions which can deeply effect for the final result and this is the reason to calculate their clear and reliable costs is an important condition of the decision making. The author reviews the cost categories and the basic functions in trading activity to find possible ways getting reliable information.*

KEY WORDS: *cost allocation; cost bearer; cost driver.*

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1. INTRODUCTION

The analysis of costs and resources used in production and services is one of the most important areas in the economic calculations of the business performance. Business units select their resources to be used in accordance with the requirements of the activity. Consequently, the most important guidelines for economic calculations can also be found in the characteristics of the activity.

According to a general approach in a production process material expenses, personnel expenses, services used other services and depreciation of the long-term assets are used as classification criteria. The classification of costs by type generally does not cause any major problem in practice, and the management of each document can be clearly distinguished in the cost structure.

However, the analysis of economic operation is typically based on the classification of costs according to occurrence and the correlation between costs and the changes of the produced volume. The primary problem is the management of direct

* Lecturer, Ph.D., Corvinus University of Budapest, Hungary, tunde.veres@uni-corvinus.hu

costs, i.e. the historic costs of products and activities. In this aspect, the direct attribute can be interpreted in several ways. On the one hand, it is the resource clearly used during the creation of a product or activity, forming its value and, on the other hand, it is also the value of the use of the resource, which may be assigned to the product or activity. The purpose of this assignment or, in other words, cost allocation is mainly to establish the historic value of the product, and to prepare a cost analysis in time and in space, as well as to assess efficiency.

There are a lot of research results about the possibilities of cost allocation, as this topic has been one of the highlights in management accounting since the 1980s. It is an important topic of management accounting in relation to the analysis of economic operation and profit maximization, as well as because of its outstanding importance in pricing. You need short and long-term thinking alike for the analysis of costs. In the short run, the continuously changing costs may be influenced depending on the creation of the product. The cost factors, which may be considered fixed in the short term, typically result from the resource requirements of the background supporting the core activity.

These categories are even more difficult to manage when we are talking about a trading business. The main questions are how to define the cost bearer, what is considered the historic value of the product, what valuation procedure is applied for the registration of inventories, how to assign the costs occurring in the trading process to products, and at what cost level should we look profitability. Naturally, it is very difficult to give general definitions for these problems, yet I would still make an attempt to define some main rules for the cost allocation in trade.

2. CATEGORISATION OF COST BEARERS

Trade focuses on the traded goods. However, for cost calculation purposes, the goods do not represent the cost bearer category. According to the general rules, the historic value of goods can be defined as the purchase price and the other items capitalized on it during the course of the purchase, and for registration purposes, it should be managed with the average or first in - first out valuation procedures. Naturally, the main source of profit in trade is the difference between the purchase and sales price of goods, therefore it is very important to define the contents of the purchase price, and to monitor the extent of its change and the factors causing the change. However, the cost bearer of the activity cannot be the goods themselves, because the resources are used for the purpose of trade as a service. The materials used (fuel, energy, forms, office stationary, etc.), the staff expenses, the services used for operation (from marketing to cleaning), and the depreciation of the intangible assets and fixed assets in use are not part of the historic value of the products and for the purpose of the analyses in order to approach effectiveness the main point is not the fact that the profitability of a product is assessed after the allocation of these costs.

Direct and indirect costs must be distinguished also in trade, i.e. the resources directly relating to the trading activity and the (indirect) resources of the operation of the business. With regard to the use of direct resources, cost bearers can be established on the basis of the trade structure. The cost bearers are identified according to the

following main initial criteria: trade business lines, characteristics of the customers, classification of markets according to geographic and sector criteria, sections and groups established according to the internal corporate structure, etc. If, e.g., a trading company owned by foreigners purchases part of its stocks from the parent company and the rest from other domestic and foreign partners, the cost bearer is identified as the business lines established on the basis of domestic and import product sales, distribution of products purchased from the parent company and other partners, and the characteristics of the products. However, if the same company sells to a retail network, logistics centres, individual customers, companies engaged in capital investment type activities and industrial users, then the classification of costs according to the structure will contain outstanding information again.

Naturally, in management accounting, the measurability of the trading activities defined as cost bearers is equally important for managing turnover data and the costs in the analysis of the efficiency and profitability of operation.

3. DIRECT COST IN TRADE

Once the cost bearer is known, at whom/which costs will be collected, we need to think of what we deem direct costs. According to the basic theoretical literature, the cost is the value of the resource used and clearly allocated to the cost bearer when the cost incurs. However, in trade the occurrence of costs is not easy to associate with an activity either. Let us take few examples:

- Naturally mostly fuel costs are direct material costs. The situation is no longer simple though, if fuel is used not only for the operation of the goods transportation vehicles, but also for the operation of the vehicles used by the sales staff. It gets even more complicated, if the sales employees used their vehicles not only during working hours, but also for private purposes.
- The company prepares its invoices using paper carrying the company's logo. As the use of this paper is primarily related to sales, the paper cost could obviously be direct material cost, but the same paper is also used for other correspondence, orders and all official documents.
- The most typical direct cost is the cost of a marketing service. The situation is absolutely clear cut, if the company publishes a series of articles or an advertisement in a special magazine in relation to a sales direction (product, business line, etc.), but if the company generally advertises itself, then the allocation of the costs of advertisement is no longer obvious.

Consequently, the economic calculations of the trading activities require a system based on well-considered cost allocation, and the entire process of operation. If one thinks of the occurrence of costs, the following system should be built: direct costs of trade; "other direct" costs of trade; general costs related to trade.

In this system, those resources are still defined as direct costs, which can clearly be assigned to the cost bearer (trade activity) based on the documents proving the occurrence of the costs.

Other direct costs of trade. The category of *other direct costs* causes a serious problem also in the cost allocation system of production companies in terms of

cost management and cost accounting. These are direct resources because they clearly relate to the cost bearer, yet the allocation can only be performed indirectly, with the help of a cost attribute or the cost driver. Such other direct costs could include the cost of operation of the production machines (e.g., energy, fuel) in production companies, the cost of employees moving the materials used in the production process, etc. In relation to trade, the other direct cost categories can be identified based on a thorough review of sales process.

We must take into account criteria, such as:

- activities that directly affect the trade (including typically the preparation and distribution of offers to customers, receipt and confirmation of orders)
- offer, order and confirmation management process (are they typically managed by various trade operations [cost bearers], or there is a central trade assistant system)
- the technical solutions used for the operation of the system (to what extent is e-commerce used, paper and tool intensity of the process itself)
- the time factor, which needs to be taken into account (in other words, the time required for preparing an offer, the time required for confirming orders, the extent to which the internal processes are influenced by the time factor, etc.)

Based on this, the following cost types are referred to most frequently in the category of other direct costs:

- payroll expenses, wage-related contributions and other personnel type payments of employees involved in specified activities,
- costs of material used by them for their activities (paper, office stationary products, etc.)
- costs of the communication tools used by them, and cost of communication with customers (telephone, postal services, Internet connection, fax, etc.)
- depreciation of fixed assets and intangible assets used for the performance of everyday tasks,
- cost of services used for the working conditions required for performing the tasks (cleaning, security services, photocopier maintenance, etc.)

Practically, the *other direct cost* category is the result of an allocation process, because these costs must be selected from the total costs of forms, telephones, depreciation, etc. Consequently, with regard to each cost type, a cost driver must be established based on which cost allocation can be performed. These cost drivers could include the following:

- paper required for producing and archiving offers, confirmations and orders,
- number and length of telephone calls with customers related to offers, confirmations and orders,
- use of photocopiers, number of copies made,
- period of operation of IT and communication devices,
- workplace requirements of employees pursuing specified activities for the allocation of the general costs of the workplace, etc.

It may be observed that each cost driver can be applied most fairly based on the continuous observation of the activity, and measurements of the specific costs. However, it is important that the observation period should be a key period for the

purpose of the activity, i.e. if sales are even in every aspect during a month, then it is enough to use the data of a week or a few days, but if the breakdown of turnover is variable, or it is hardly predictable, then a longer period must be observed.

The problem gets even more complicated, if the company has a joint trade assistant group serving the cost bearers (business line, product group), and managing and registering offers, orders and confirmations for all cost bearers. In this case, the established other direct cost category should be broken further among the cost bearers in order to establish their economic operation. In this case, the allocation can be performed on a more limited basis without making the system too complicated.

In the concepts of traditional cost calculation, a cost attribute is a technical parameter, according to which the cost varies and the correlation of which with the cost bearer can be measured, and therefore based on this the cost can be allocated to the cost bearer.

The concept of the cost driver is a category among the concepts of the ABC (Activity Based Costing) cost calculation, which has become increasingly important since the middle of the 1980-s. With this method, allocation can be performed on the basis of the activity-based analysis of the process, and the calculation of the cause of the resource requirements of the individual elements and the correlation between the cost driver and bearers of costs.

In a company performing trading activities, the processes of the activity can be defined from the receipt of the commercial product to its delivery to the customer (handover) depending on the complexity of the system. However, the trade itself contains the following processes:

- management of orders, offers and confirmations related to products to be sold
- maintenance of the inventories of products according to the warehousing policy
- physical implementation of warehousing (stock movements related to purchases and sales)
- management of offer requests, orders and confirmations received from customers
- customer complaints, information, technical advice, etc.
- financial tasks: monitoring of payments made by customers, monitoring of deadlines, establishment of sales limits, etc.

According to the above processes, the system can be simplified in several ways, as an example I shall outline the following activity groups above direct cost of sales and general administration costs:

Table 1. Functions of sales activity

Order registration and confirmation
Invoicing
Costs of customer relations
Costs of logistics and warehousing activities
Cost of financial task

The first category of the listed simplification contains the direct costs of trading tasks, and the use of resources that are clearly deemed direct when it occurs,

while the last category contains all the general costs of the company. How can we distinguish the value of the used resources according to the above categories? What criteria should be use as a cost driver?

Staff proportionate cost allocation. The implementation of staff proportionate cost allocation significantly depends on the size of the business. As the human factor is important for each partial process, the use of the staff in establishing cost categories can be an important argument.

Whenever the individual organizational units are separated by business line and activity in the corporate structure, it is easy to separate the majority of the cost types with the help of staff proportionate calculation.

If the activities of various sections serve all cost bearers (business line, product group, customer, etc.), then the accuracy of staff-based allocation involves some risk, but if the use of the system is sufficiently prepared, it may be reliable. In the preparatory phase, the staff proportionate calculation is not free of subjective factors. The most typical process is the allocation of the employees' working hours based on their voluntary declarations and the allocation of costs accordingly. Naturally, the voluntary declaration of employees can be tested with the observation of the specific working hours, and actual measurement is generally recommended. Subjectivity, i.e. the excessive evaluation of their own working hours, or even distortion of distribution among business lines in their own interest cannot be avoided in relation to human resources.

As an example, let's think about a trading company with 3 business units, employs 2 sales officers in each business units, 2 trade assistants for managing orders and invoices, 3 warehouse keepers and 1 financial administrator for monitoring the payments of receivables. According to their working time analyzes the company has the following staff allocation by functions in each unit:

Table 2. Staff allocation by functions in units

Definition	Breakdown of working hours between business units		
	Unit 1	Unit 2	Unit 3
Sales staff - 6 people	2	2	2
Invoicing assistant - 1 person	0.4	0.25	0.35
Trade assistant - 1 person	0.4	0.3	0.3
Warehouse keepers - 3 persons	$0.8+0.4+0.3=1.5$	$0.1+0.3+0.6=1$	$0.1+0.3+0.1=0.5$
Financial administrator - 1 person	0.2	0.5	0.3
Calculated staff / unit	4.5	4.05	3.45
Proportions	4.5/12	4.05/12	3.45/12

This calculated number of employees' in the business activity can help to allocate mainly the staff expenses and the costs that are caused or depend on the staff. Of course the calculation is more reliable if we use the detailed information about salaries and social costs according to different staff categories, but also the average calculated staff proportion should be useful in allocation where the cost depend on the number of persons.

Selection of a cost driver by cost type. The selection of a cost driver by cost type is more simple in relation to general costs, because it is easier to define and separate, based on documents, the cost types in the accounting records, and to define a separate cost driver for each cost type requires a considerable calculation system. Cost drivers are parameters, which can be documented in the whole system and measured well in natural measures.

For example, there are the following simple costs and cost driver correlations:

Table 3. Correlations between simple costs and cost driver

Cost type	Cost driver
Cleaning cost	Cleaned area in m ²
Maintenance cost of the information system	Computers used and other IT equipment requiring maintenance
Heating costs	Heated air space, air m ³
Bank costs	Number of paid invoices
General phone costs	Number of offers or orders
Invoicing administration costs	Number of invoice lines
Entertainment costs	Number of the business meetings or clients

With regard to cost types in many aspects, it is easy to define one cost driver, based on which the incurred cost can be allocated, yet allocation to cost bearers or measurement could be a problem also in this case. A fair system recording and analyzing of costs drivers help a lot to see clear picture about needs of units.

Definition of the cost of a function. The first step of the allocation of the other general costs in trading according to the ABC method is to separate the costs of the various processes. Thus, using the above examples, if we wish to know the warehousing cost by business line (cost bearers), then first we must define the cost types that may occur during warehousing and then they should be allocated to business lines according to the cost drivers. In other words, if heating costs are calculated for warehousing and logistics cost centers based on the air space of the warehouse (air cubic meter) and electricity consumption and water consumption is also allocated according to the period of operation, plus IT maintenance costs are allocated based on the warehouse computers, etc., then all the thus established costs can be allocated to business lines based on the place used by it (e.g., number of pallets).

Naturally, this calculation also requires serious cost definitions and cost drivers, but by establishing as well-founded calculation route, it is clearly suitable for measuring the activity.

4. SUMMARY

The main income of trade is the margin generated based on the revenues of the traded goods and their purchase value. However, it is absolutely necessary to measure the efficiency of the activity in this aspect, too. Based on the above analyses, the activities of trading companies can be monitors and analyzed in the following structure:

Table 4. Structure of activities of trading companies

Net sales revenues
- Purchase value of goods sold
Sales margin
- Direct cost of sales
- Invoicing, order registration
- Logistics, warehouse expenses
- Costs of customer relations
- Costs of financial tasks
- Margin remaining after other direct costs
- General administration costs
Operating profit

The margin generated in effective trade activities covers all costs of the activity and also provides a profit. On the other hand, cost control requires considerable cost calculation. Cost allocation and analyzes is basic part of management accounting to give reliable picture about the efficiency of the business activities. The information from a theoretically well-build system about the cost structure is very important asset in decision makers' hand. These types of calculations are basically required for continuous cost control and also for pricing.

REFERENCES:

- [1]. **Anthony, R.N.; Govindarajan, V.** (2007) *Management Control System*, 12th edition, New York (Hungarian edition Panem Könyvkiadó Kft. Budapest, 2009)
- [2]. **Bosnyák, J.; Gyenge, M.; Pavlik, L.-SzékácsP.** (2010) *Vezetői számvitel (Management accounting)*, Budapest
- [3]. **Clarke, P.; Mullins, T.** (2001) *Activity Based Costing in the Non-Manufacturing Sector in Ireland: A Preliminary Investigation*, Irish Journal of Management, 22(2), pp.1-17
- [4]. **Cooper, R.; Kaplan, R.** (1988) *Measure Costs Right: Make the Right Decisions*, Harvard Business Review, September-October, pp.96-103
- [5]. **Dickinson, V.; Lere, J.C.** (2003) *Problems evaluating sales representative performance? Try activity-based-costing*, Industrial Marketing Management, 32(4), pp.301-307
- [6]. **Drury, C.** (2008) *Management and cost accounting 7th edition*, UK
- [7]. **Drury, C.** (1997) *Management Accounting for Business Decisions*, ITP, Oxford
- [8]. **Hornngren, C.T.; Foster, G.** (1991) *Cost Accounting A Managerial Emphasis 7th edition*, Prentice Hall, New Jersey
- [9]. **Hornngren, C.T.; Sundem, G.L.; Stratton, W.O.** (2002) *Introduction to Management Accounting*, 12th edition, Prentice Hall, New Jersey
- [10]. **Kaplan, R.S.; Atkinson, A.A.** (1998) *Advanced Management Accounting*, 3rd edition, New Jersey
- [11]. **Robinson Fayek, A.** (2001) *Activity-Based Job Costing for Integrating Estimating, Scheduling and Cost Control*, Cost Engineering, Aug , 43(8), pp.23-32
- [12]. **Stratton, W.O.; Desroches, D.; Lawson, R.A.; Hatch, T.** (2009) *Activity-Based Costing: Is it still relevant?*, Management Accounting Quarterly, 10(3), pp.31-40