

# Activity-Based Costing System for a Small Manufacturing Company: A Case Study

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## INTRODUCTION

The selection of the right cost calculation method is of critical importance when it comes to determining the real product profitability (as well as clients and other calculation objects). Traditional cost calculation methods often provide false information. The literature offers many examples of big companies that have given up traditional methods and applied a new method: **activity-based costing** (ABC). They discovered that many products that are manufactured generate losses and not profits. Managers, based on incorrect calculations, mistakenly believed in the profitability of each product. Turney (1991) reports on an example of an American manufacturer of over 4,000 different integrated circuits. The cost calculation with the allocation of direct production costs as machinery-hour markup demonstrated a profit margin of over 26% for each product. Implementing ABC showed that the production of more than half of the products was not profitable, and having factored in additional sales and management costs (which accounted for about 40% of the total costs), it was as much as over 75%.

Similarly, there are also numerous examples of when not all customers render benefits: Some of them cause losses as well. A typical example reported by Kaplan (1989) involves a Swedish company Kanthal, a manufacturer of heating pipes. Implementing ABC revealed great differences in the profitability of respective clients of Kanthal. It appeared that 20% of the most profitable clients generated 225% of the total profit, 70% of other clients were found on the border of profitability, and 10% of the least profitable clients generated a loss that accounted for 125% of the profit reported at the end of the accounting period. Kanthal made a detailed analysis of causes of losses for the least profitable clients and took adequate measures, which in the following year enhanced the results of the company considerably.

Polish literature gives an example of a distribution company representing the FMCG business (fast-moving consumer goods), which as a result of implementing ABC learned that as much as 23% of the clients generated PLN 374,000 of the profit for the company, another 57% of the clients were found on the border of profitability, and the last group of 29% of the clients generated losses of PLN 540,000, thus resulting in the profitability ratio calculated for the entire company showing a negative value (Zieliński, 2005).

The investigations reported by the present author demonstrate that the problem of a false picture of profitability of products and clients concerns also smaller companies. Examples representing SMEs (small and medium-sized enterprises) revealed that calculations made using the ABC method provided quite different results of unit costs (and as a result profitability) of products than the results obtained with traditional methods. With a foodstuffs manufacturer the ABC implementation showed that only 37% of the products were profitable, 10% of the products were found on the border of profitability, and as much as 53% generated losses. In the case of many products, the profitability calculated with a traditional as well as with the ABC method differed considerably (Januszewski, 2006b). In yet another small trading enterprise researched by the present author it was demonstrated that 20 of 392 clients (5%) generated a contribution margin (CM) at the total amount of PLN 500,000. Another 100 of them (25%) yielded PLN 500,000. It also turned out that almost 66% of the clients did not contribute any profit and 12.5% caused losses (Januszewski, 2006a).

In the opinion of the present author, small enterprises are equally, if not more, exposed to hazards as a result of cooperation with unprofitable clients and manufacturing unprofitable products. Market competition drives companies to a search for new clients. On the one hand, small and medium-sized entities often accept any client that would be willing to acquire their products, commodities, and articles. On the other hand,

they use simple accounting systems and cost calculations that do not allow a thorough and true determination of product manufacture costs or costs of serving the client or supplier. As a result, it does not allow them to assess if a customer or supplier is ultimately profitable or not.

One shall also add that SMEs less frequently than big companies implement cost calculation for their activities (as well as other advanced systems), which coincides with the results of research carried out in Great Britain in 1999 by Innes, Mitchell, and Sinclair (2000). It is often a result of no awareness of a potential distortion of costs calculated with traditional methods, a lack of adequately qualified staff, and a belief that advanced methods are addressed to big companies and a small enterprise does not need them.

The intention of the present author is to demonstrate that the application of cost calculation for activities of small and medium-sized enterprises is not difficult and that it is worth implementing. A small company manufacturing liquid cleaning products will be used as an example. The article will show how to develop the **ABC** system and will give results of product and client profitability. Other examples of the **ABC** models for small-sized enterprises are also presented by Hicks (2002).

## **BACKGROUND**

### **Origin of the ABC**

For the last few dozen years, the following company operation phenomena have been observed:

- The automation of production processes has meant the demand for unskilled workers is decreasing while the demand for specialists is increasing.
- The importance of secondary processes, going around production, is increasing (inspection, supervision, sale, marketing processes, etc.).
- Firms are outsourcing many services (e.g., tax advising).

Cokins (2001, p. 5-6) states,

over the last few decades organizations have been increasingly offering a greater variety of products and services as well as using more types of distribution and sales channels. In addition, organizations have

been servicing more and different types of clients. Introducing greater variation and diversity (i.e., heterogeneity) into an organization creates complexity, and increasingly complexity results in more overhead expenses to manage it.

As a result of these phenomena, there occurred a complete change in the cost structure of company operations. Research results published in 1985 show that for 100 years in American industry, common costs (indirect costs) had been continually growing from 40% to 75% of the entire costs, while participation of direct costs of labour had been diminishing from 55% to 25% of the entire costs (Kaplan, 1990). According to Cokins, Stratton, and Helbling (1993, p. 2), "As businesses have become more complex, the elements of costs are replacing the direct costs of touch-laborers and purchase materials."

Here it is highly probable that the use of traditional methods of cost calculation will result in a distortion of unit costs of the products. Traditional cost allocation methods work only when the following apply (Cokins, 1996):

- Few very similar products or services are produced.
- Overheads are low.
- Production and conversion processes are homogeneous.
- Customers, customer demands, and marketing channels are homogenous.
- Selling, distribution, and administration costs are low.

The change in the cost structure in organizations has become one of the main reasons for the criticism of the traditional cost accounting systems and their usefulness in the evaluation of products and services profitability.

As an answer, by the end of the 1980s, a new cost-calculating method, activity-based costing, was proposed (Cooper & Kaplan, 1988; Johnson & Kaplan, 1987; Kaplan, 1988). According to Kaplan and Cooper (1997), there exist two simple rules to be used when searching for a potential applicable use of ABC systems:

- **The principle of Willy Sutton:** The share of indirect costs in all the costs is high.
- **The principle of high diversity:** There are a lot of different products, clients, suppliers, processes, and so forth.

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