

Changes In Company's Management Accounting Systems: Case Study on Activity-Based Costing Implementation and Operation in Medium-Sized Production Company

Tomasz WNUK-PEL*

Abstract

This paper aims to explore factors, which influence the process of activity-based costing (ABC) implementation, as well as analyze and explain the changes in the area of methodology and organization of a company, after activity-based costing implementation. The research findings are of both theoretical and practical importance. From the practical point of view, companies considering implementation of ABC should be aware of the positive and negative factors conditioning the process of implementation; in addition, they should be familiar with methodological and organizational changes, which might stem from the ABC implementation. From the theoretical point of view, this research might be helpful in determining a more general tendency: although modifications in cost accounting systems and implementation of modern methods of management accounting in Polish companies come later than in more developed economies, the tendency heads in the same direction.

Keywords: *activity-based costing, management accounting change, management accounting in Poland, case study research, institutional and methodological changes*

JEL Classification Codes: M41

* PhD, Accounting Department; Management Faculty; Łódź University, Poland; e-mail: tomwnuk@uni.lodz.pl

1. Introduction

Early activity-based costing research, documenting its expansion in the early nineties of the 20th century, showed an immense interest in ABC among managers from a majority of highly developed countries (Ask & Ax, 1992; Nicholls, 1992; Bright et al., 1992; Drury & Tyles, 1994; Innes & Mitchell, 1995; Armitage & Nicholson, 1993). The number of companies, which implemented and used activity-based costing, was rather minor at that time. A small number of researched companies was undergoing the ABC implementation process but many of them were planning or considering the implementation.

Research carried out in the late nineties of the 20th century showed that the number of companies using activity-based costing was growing (Lukka & Granlund, 1996; Björnenak, 1997; Gosselin, 1997; Cinquini et al., 1999; Clarke et al., 1999; Innes et al., 2000). What was significant, more and more companies were planning or considering ABC implementation. On the other hand, one could notice that some companies resigned from ABC implementation after analyzing the prospective costs and benefits. There were also rare cases of companies which abandoned activity-based costing after its implementation and use. Despite the fact that the number of companies using or interested in implementing activity-based costing was growing, the pace at which the new system spread was slower than expected. Interestingly, the notion was observed when a record number of articles on activity-based costing was published, ABC became part of curriculum at universities or vocational courses for management accounting experts, and consultancy or IT companies were competing in promotion of the new system.

ABC diffusion research conducted in highly developed countries in the first decade of the 21st century revealed that the number of companies using ABC ceased to grow and stopped at an average, lower than anticipated, level (Clarke & Mullins, 2001; Cotton et al., 2003; Pierce, 2004; Lawson, 2005; Al-Omiri & Drury, 2007; Cinquini et al., 2008; Kallunki & Silvola, 2008). Moreover, the number of companies planning or considering the implementation of activity-based costing dropped; simultaneously, the number of companies, which quit implementation after analyzing costs and benefits, rose.

The situation was different in the developing countries. In the nineties of the 20th century, cases of ABC implementation were incidental, and apart from a few exceptions (Firth, 1996; Anderson & Lanen, 1999), nobody carried out any research on ABC expansion. Greater interest in activity-based costing in developing countries could be observed at the beginning of 21st century. At the time, the number of ABC implementations grew which led to appearance of a larger number of diffusion researches carried in the companies in those countries (Anand et al., 2005; Chow et al., 2007). Unlike highly developed countries, where the interest in activity-based costing slumped and the number of companies using ABC ceased to grow (some researches even showed a decline in this number), developing countries

characterize of a growing number of companies in which activity-based costing is being implemented.

The first survey examining adoption of ABC by Polish companies was carried out by Sobańska & Wnuk (2000). Other research projects identified isolated cases of applying activity-based costing or its elements (Jarugowa & Skowroński, 1994; Szychta, 2001; Karmańska, 2003; Gierusz & Januszewski, 2004; Wnuk-Pel, 2006; Szychta, 2007) or found that companies surveyed were implementing or planning to adopt ABC (Szychta, 2001; Karmańska, 2003; Gierusz & Januszewski, 2004; Szychta, 2007). Some of the surveys conducted so far have not identified any companies implementing ABC or even considering its adoption. It should be noted, though, that most of such findings were reported by earlier surveys (Kinast, 1993; Sobańska & Szychta, 1995; Gierusz et al., 1996).

Questionnaire surveys, concentrating on the extent of ABC adoption naturally, are not a source of extensive knowledge about ABC systems functioning in different countries. This is due to the very nature of such studies – they do not provide sufficient data for a very detailed analysis of the application of ABC models. To gain a more in-depth knowledge for the analysis of ABC models structure and application, the survey method can be usefully supplemented with the case study method and action research method. The use of these methods makes it possible to see how ABC models are being implemented in different companies, how they are functioning and being monitored, and how different employees assess their usefulness. Case study method and action research method, despite their shortcomings, allow a more in-depth study of the issues mentioned above.

Already in the 1980s Kaplan (Kaplan 1984, 1986) advocated research in the form of case studies and action research (innovation action research) for better understanding and analysis of management accounting practice, to provide a basis for developing new concepts and methods to be subsequently used in practice. It particularly refers to research on the functioning of ABC systems in practice. Despite certain limitations of case studies (Hopper et al., 2001; Zimmermann, 2001; Scapens, 2004), this method is increasingly adopted for the purpose of detailed analysis of ABC systems implementation and application in practice, and for identification and understanding of the related processes and problems.

In the early phase of popularization of activity-based costing, many of the published case studies focused on comparative analysis of ABC and traditional costing systems (eg. Kaplan, 1987). A considerable proportion of case studies at that time was concerned with ABC systems design, in particular with estimating costs of activities, choice of activity cost drivers, construction of costing systems for operational and strategic purposes, and integration of management accounting with financial accounting systems (e.g. Cooper, 1985). The authors of published research analyzed ways of interviewing line managers during system designing and presented methods of cost accounting in ABC, especially with regard to determination of costs of resources on the basis of accounting information and

their allocation to activities (e.g. Datar & Kaplan, 1995). Many of the widely publicized case studies are focused on comparison of the results of cost calculation using ABC and traditional costing systems, and on investigation into causes of these differences (e.g. Kaplan, 1987). A topic that is very often addressed in case studies is the economic consequences of implementing activity-based costing, including such issues as price policy formulation, products and production technologies designing, analysis of customer service costs and their profitability, and business strategy implementation (e.g. Cooper, 1985). Relatively many case studies were devoted to broadly understood activity-based management (ABM), and particularly to analysis of activities, continuous improvement and performance management (e.g. Narayann & Sarkar, 1998). Other issues addressed include, among others, variance analysis, ABC systems implementation and behavioral implications of ABC application.

The case study method and action research method are also increasingly used in research on ABC implementation in Polish companies. The first case studies were carried out in 2000 (Wnuk, 2000; Kujawski & Ossowski 2000), and action research – in 2001 (Świdorska & Pielaszek, 2001). Later the number of such research projects grew, especially from 2004, when there was a steady increase in the number of companies using, implementing or considering implementation of ABC. The subject matter of this research varied widely – generally speaking, it was mainly concerned with the process of ABC systems implementation and the utilisation of information generated by these systems.

To sum up the above it should be stated that the research in Poland was primarily concerned with the extent of ABC adoption (questionnaire studies). Research findings point to an increasing percentage of enterprises, which are using, implementing or planning implementation of ABC. Case studies and action research also make possible an analysis of the functioning of ABC systems and application of information that they supply. There were no however so far any research explaining factors influencing ABC adoption and changes which are taking place in companies after activity-based costing adoption. In the light of the above, the purpose of the paper is to analyze factors influencing activity-based costing implementation and explain methodological and institutional changes in the company that were the result of activity-based costing implementation. The paper is organized as follows. First, the research methodology is shortly presented followed by analysis of activity-based costing implementation and operation in the selected company. Then factors influencing activity-based costing implementation and changes in management accounting systems following implementation are discussed. The paper ends with short conclusion.

2. Research methodology

Based on literature about theory of changes and diffusion of innovation in management accounting (Hopwood, 1983, 1987; Groot & Lukka, 2000;

Abrahamson, 1991; Abrahamson & Rosenkopf 1993), following hypothesis have been formulated¹:

1. the activity-based costing implementation process is influenced positively by three groups of factors: motivators, catalysts and facilitators; the factors affect the implementation collectively, promoting the process of change;
2. the factors which obstruct the process of ABC implementation are: resistance towards change, great amount of labor and insufficient knowledge on activity-based costing;
3. implementation of activity-based costing triggers off numerous methodological changes, mainly improvement in accuracy of indirect costs calculation and profitability analyses;
4. ABC implementation contributes to organizational changes in the company i.e. nearing functions of management accounting and operational functions, the rise in the importance of management accounting information, as well as its more frequent use, especially in the decision-making process.

ALFA SA case study started from completing a questionnaire by the respondents (Appendix 1) – later, gathered information was made more detailed in the course of interviews; the information was also extended with problems which could not be surveyed in the questionnaire itself (for example methodological and institutional changes that occurred after implementation of the new management accounting concept – activity-based costing). The interviews were conducted with people employed in operational and financial divisions; most of the time was given to people responsible for functioning of the activity-based costing system. Altogether interviews were held with 12 respondents, including 3 persons from the Board of Directors, 2 persons from Controlling (Controller and Controllers' assistant) and 7 persons from other departments (Production, Sales, Marketing, Logistics and IT). Four of the respondents could be classified as information providers and eight as information users. Interviews lasted from 0,5 hours to 4,5 hours. To verify and extend the collected information, the interviews were followed by telephone conversations and e-mail messages. Gathered information was confidential and for that reason, the interviews were not recorded. The interviews were semi-standardized i.e. they were based on the interview questionnaire, yet completed by additional questions, which enabled better understanding of ABC implementation process in ALFA SA; especially: (a) the stages, problems and ABC implementation effects, (b) the structure of ABC system implemented in the surveyed company, (c) ways of use of the information from the ABC system, (d) factors influencing the process of changes, (e) methodological and institutional changes resulting from the activity-based costing implementation. The analysis and evaluation of surveyed

¹ Stages of the research are compliant with the stages of empirical studies in management accounting, see: Ryan et al., 2002.

information with description of ALFA SA case study constituted the last stage in the research.

3. Case study of cost accounting implementation in ALFA SA

3.1 Company and current cost accounting system characteristics

ALFA SA was established over twenty years ago in central Poland. It was originally a trading company, which supplied intestines, seasonings and other additives to meat processing plants. Gradually the scope of goods offered by ALFA SA widened, the number of clients increased and the company began developing dynamically.

Several years ago, a decision was made to expand the business and the company started to manufacture flexible netting used in the meat industry. At that time, the company's strategy was to give up purchasing ready-made products and gradually replace them with their own goods. ALFA SA continued the development of their products, carried on implementing new technologies, began building up a network of sales branches in entire Poland and expanded its sales abroad.

During the research, ALFA SA was a company, which employed more than 100 people and specialized in providing unique products to numerous clients (differentiation strategy). The business in which the company operated characterized average competitiveness. The company's capital was entirely Polish and its sales was mainly domestic (approx. 70%). ALFA SA concentrated on manufacture of a few groups of products:

- netting – primarily used in meat industry, but also in poultry and dairy industries,
- membranes – used in the production of gourmet foods,
- compounds – seasoning compounds, decorative sprinkles and cold meat additives,
- additions – additives and tools used in cold meat production.

Customer satisfaction was ALFA's SA main preoccupation. All their products received appropriate food contact materials approvals. Systems such as HACCP (Hazard Analysis and Critical Control Points), ISO 9001 (International Organization for Standardization) operated within the company for a few years, moreover, ALFA's SA products had been granted many foreign certificates. The company had a functional structure with basic functions, among them logistics, production, sales and finance (in this structure, the Controller was subordinate to the Chief Accountant). The simplified diagram presenting the main product (flexible netting) manufacture is illustrated in Figure 1.

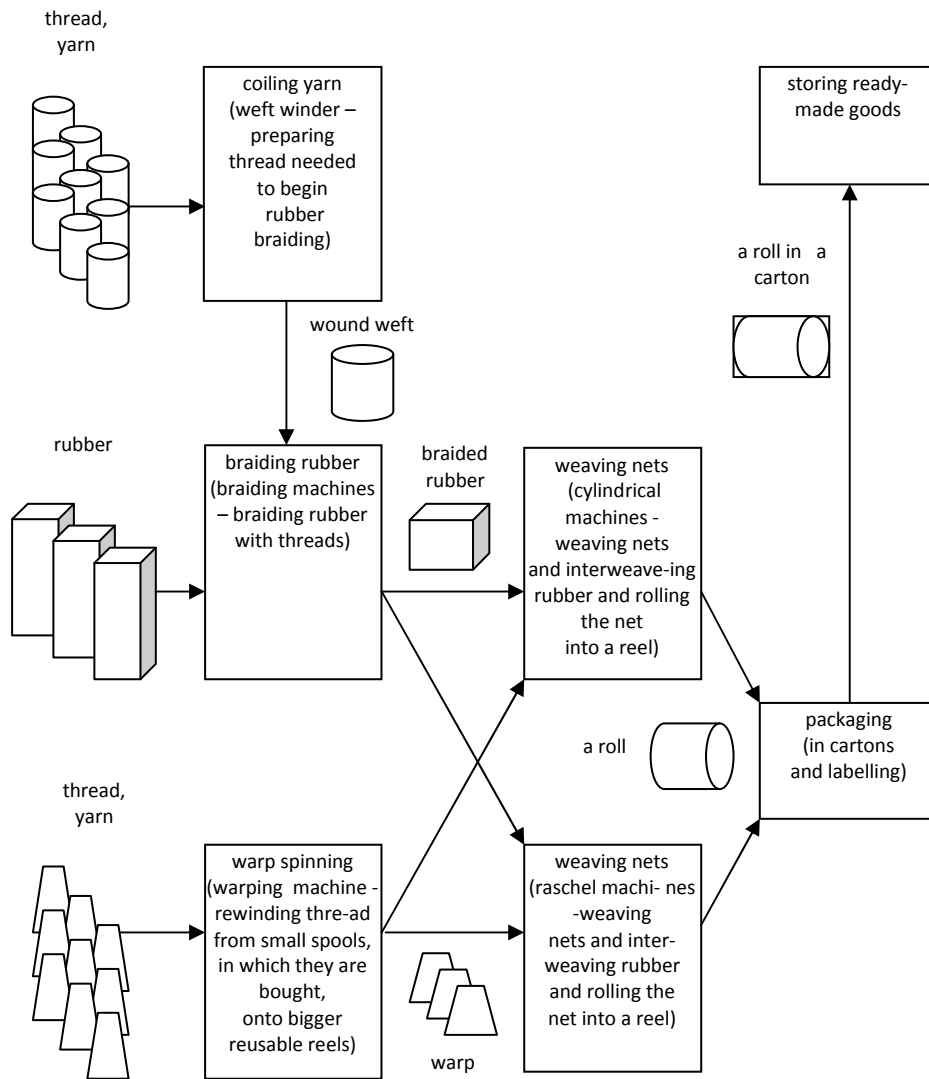


Figure1. Simplified diagram of flexible netting manufacture process

Prior to ABC implementation in ALFA SA, the company used the traditional full absorption costing. It has been decided by the Board to implement it and, from then on, it was used in the company despite any external influences. In the company's cost structure, one could distinguish the following: (a) direct materials (60%), (b) direct labor cost (15%), (c) indirect costs (25%). Over the recent years, before implementing activity-based costing in ALFA SA, the indirect costs share in the cost structure has slightly risen. In the hitherto cost accounting system, no overheads or variable costs, nor unused production capacity costs have been distinguished.

Before the implementation of activity-based costing in ALFA SA, the Controller branded the decision making process as "management by trial and error". The lack of information (about the costs and profitability) and relying extensively on the intuitive decision-making was the most characteristic of the company. Since the financial situation of ALFA SA was satisfactory, no one has realized the need to improve the product costing system. The approach changed after the company underwent an internal course on cost accounting and management accounting. During the course, the CEO (Chief Executive Officer) of the company realized that "product cost accounting in his company leaves much to be desired, and that this area has been neglected, yet the company could benefit from implementing improvements". Subsequently, the CEO of ALFA SA selected a group of several employees who could potentially deal with the problem, and afterwards he appointed one the Controller to lead the group. The Controller, in order to complement and widen his knowledge on cost and management accounting, was delegated to attend post-graduate studies in management accounting and controlling.

It should be mentioned, that at the time when the decision about implementation of activity-based costing has been made, the CEO of ALFA SA was also the CFA (Chief Financial Officer). It meant that there was no other person in the company who dealt with the issue of finance and management accounting. The CEO mainly focused on cash management, leaving the area of cost accounting to the Accounting Department (such organization reduced cost accounting to only fulfilling the requirements of financial accounting and ignored the decision-making needs). ALFA SA aimed to create cost accounting system, which would enable the company to move from the "management by trial and error" to management based on reliable cost analysis and profitability.

Direct survey conducted in ALFA SA showed that the implementation of activity-based costing was influenced by numerous factors. Changing management's information needs, cost reduction, improving business results and improving control were considered crucial. Yet, the implementation of ABC was mainly caused by dissatisfaction with the hitherto cost accounting system and the need to alter company's organizational structure as well as firm's strategy. The change in the top management and implementation of new technologies moderately influenced the

introduction of ABC. The rise of competitiveness, the aim to enter new markets, favorable atmosphere or access to relevant financial and human resources were of little significance. The creation of activity-based costing, which would support management decisions, had three stages:

1. improvement of cost recording system – due to the fact that the direct and indirect cost recording system in ALFA SA was unsatisfactory, it has been decided to start creating the new cost accounting system from the quality improvement of source information, which were to feed the new cost accounting system;
2. creation of new cost accounting system – on the basis of the improved cost recording system, it has been planned to create a completely new, based on the principles of ABC, cost accounting system in the company;
3. construction of activity-based costing model – a new computer model of cost accounting was created; it was based on the revised cost recording system and the new cost accounting system; the computer model enabled calculation of product costs, variance analysis and creation of different types of reports needed in production and sales decision-making processes.

3.2. General information on activity-based costing system

The implementation of the new cost accounting system in ALFA SA started from the CEO words directed to the Controller, “does something with the calculation model because this one seems bad”. In response, the economy division decided to implement the new cost accounting system. Initially, the company did not plan implementation of the activity-based costing, but, as the Controller stated, “a satisfactory cost accounting system, enabling reliable cost calculation and product profitability; and later, ABC turned out to be the satisfactory cost accounting system, in my opinion it is OK”.

The implementation of ABC in ALFA SA coincided with the Controller's promotion to the post of Deputy Cost Production Director. The promotion and the transfer to the production division meant independence from the Chief Accountant, who before was Controller's superior, and it meant nearing the problems he was supposed to solve (the model, in the first instance, was to address the problem of product cost calculation).

Originally, in ALFA's SA cost accounting system only breakdown of costs by type functioned, which was mainly used for financial reporting. During the implementation of activity-based costing, new dimensions in the company's chart of accounts have been created: (a) cost centers (divisions, departments, regions etc.), (b) activities (groups of related actions taken in the relevant cost centers, i.e. activities such as warping, weaving, braiding, weft winding, packaging have been isolated in the production department).

The implementation of activity-based costing in ALFA SA was conducted individually by the company's staff without external experts' help (the company did not ask any cost accounting and computer experts for consultation). The process was mainly implemented by three employees – the Controller himself, his Assistant and a trainee, who collected data from the production. On finishing the implementation tasks, the model was overseen by one employee, who had also other responsibilities. Having ABC implemented, ALFA SA did not resign from the hitherto cost accounting – it was still used for preparing financial statements compliant with financial accounting rules.

Activity-based costing implementation in ALFA SA was considered by the workers to be a “moderate success”. During the implementation process several minor and major problems appeared. The most serious ones were the enormous amount of labor required to implement and maintain ABC (major problem) and other priorities (significant problem). Other common problems were listed such as high costs of ABC implementation and maintenance, insufficient knowledge of ABC among employees and difficulties with the model itself (selection of activities, drivers etc.). In the implementation process and the following system maintenance, there were in fact no problems with the management's support nor with the IT (Information Technology) resources (slight problem).

ABC implementation in ALFA SA required customization of IT systems operating in the company. Data processing and presentation of the activity-based costing information was made in a specially designed model in EXCEL spreadsheet. The activity-based costing model functioning in ALFA SA was entirely prepared by the Controller and was based on the data provided by the finance and accounting system (information about revenues and resources costs), HR (Human Resources) and payroll system (information on costs of remuneration and data from the employees' timesheets), standard information about materials (consumption standards of direct materials), information from the production system (quantitative data about production) and other data (i.e. information about mileage of company's cars and other data especially collected for activity-based costing purposes) – this data was transferred to the ABC system both automatically and partly manually.

3.3. Structure of activity-based costing system

In ALFA's SA activity-based costing system several resources, resource drivers, activities and activity drivers, and more than five hundred cost objects (group of products and products) have been isolated. In the company's ABC system, following concepts have been isolated:

- activity on the level of product unit (no activity on the level of a batch of products, types of products and a company as a whole have been isolated),
- fixed costs and variable costs,

- Unused production capacity and its costs (the costs are not calculated for products but they are wholly allocated to profit and loss account).
- The activity-based costing system in ALFA SA has not yet been modified.

Within the system, many profitability analyses have been carried out i.e. several analyses for distribution channels, internal organization units, sales regions and groups of clients; there have also been several dozen analyses for clients and groups of products. More than 500 analyses were carried out for specific products.

ALFA's SA activity-based costing system did not accurately follow the Kaplan and Cooper's cost accounting notion, which focuses on tracing all direct costs based on source information to products, and tracing all indirect costs firstly to resources and then allocating them to activities and lastly allocating costs of activities to products.

ALFA's SA model is close to the above, yet with a few exceptions:

1. costs of machine and production unit repairs are not collected on the resources of "machine X" or "machine Y" but they are directly allocated to activities, for example "packaging" with all other machines' costs;
2. direct employees' remuneration costs are not traced in the cost accounting system in products, but they are allocated, on the basis of source information (timesheets), to activities performed by the employees for particular groups of products;
3. costs of raw materials are not directly traced to products but first they go to activities, in which they are used, however, there is no indication what product they are used for. Subsequently, the raw material costs accumulated on a particular activity are accounted, proportionally to established standards, for goods produced in a given activity;
4. there are activity costs only on the level of a unit product activity (there are no activities on the level of product groups or a type of products). The lack of activities on the level of product groups or type of products, as the CFO in ALFA SA put it, "is the only thing in the ABC system, which has not been taken into consideration yet";
5. indirect costs are only accounted for products and their groups (the clients profitability is calculated as a variation between the client's revenue and cost of a products sold to the particular customer – no activity costs are directly accounted for clients).

One should mention, that in the researched company, nobody used a term of a "cost driver", instead they talked about an "allocation base". However the allocation base used in ALFA SA were equivalent of a cost driver from the ABC model. The company did not seek to implement the exact activity-based costing system with all its terminology, concepts presented in the academic literature, but

they sought to improve considerably the quality of product costing. The CFO defined it as follows, "it was not about dividing by number or value of products sold or produced.

In the activity-based costing system in ALFA SA, in particular business areas, many resources with allocated costs have been isolated (the resources were called in the company "calculation cost positions" and they comprised of i.e. cars (each one individually), fixed line and mobile telephones (each one individually), buildings and their rooms (each building individually and most of the rooms individually too).

Numerous activities have been isolated in the ABC system of ALFA SA, among them warping, weft winding, braiding rubber with threads, convoluting strings, net weaving on the 3 needles/inch raschel machines, net weaving on the 6 needles/inch raschel machines, net weaving on the cylindrical machines, weaving Christmas tree nets, weaving fishnets, weaving decorative ribbons, weaving nets for collagen membranes, packaging, processing of cellulose foil, maintenance, administration and production organization.

All costs in the ABC system in ALFA SA were divided into fixed and variable costs (apart from direct material costs and direct remuneration costs, electricity and other media costs were included in the variable costs pool). The fixed and variable cost division was carried out by means of accounting method. In the Economic Director's opinion "the best way to isolate fixed and variable costs is to create a sense of awareness in the managers and accounting staff; extensive qualifications of managers and accounting staff give better results than any statistical method".

It is worth pointing out that in the activity-based costing system of ALFA SA, for one cost center there was limited (finite and fixed in advance) number of resources. However, there were no settled prime costs allocated to a particular resource in a given cost center i.e. it was not fixed which type of costs would be allocated to which source in a particular cost center (it was possible that at two different times, depending on the circumstances, one type of cost was allocated to two different sources). The lack of automatic type of cost allocation made the system flexible (each event could be classified depending on the context), but its operation was mostly dependent on managers and accounting staffs' knowledge and qualifications.

The model of activity-based costing in ALFA SA involved only administration, logistics and production, and its main task was to calculate the costs and profitability of product or groups of products. The model functioned in four production departments (compliant with the basic groups of products). A simplified diagram presenting the functioning of activity-based costing in ALFA SA is presented in Figure 2.

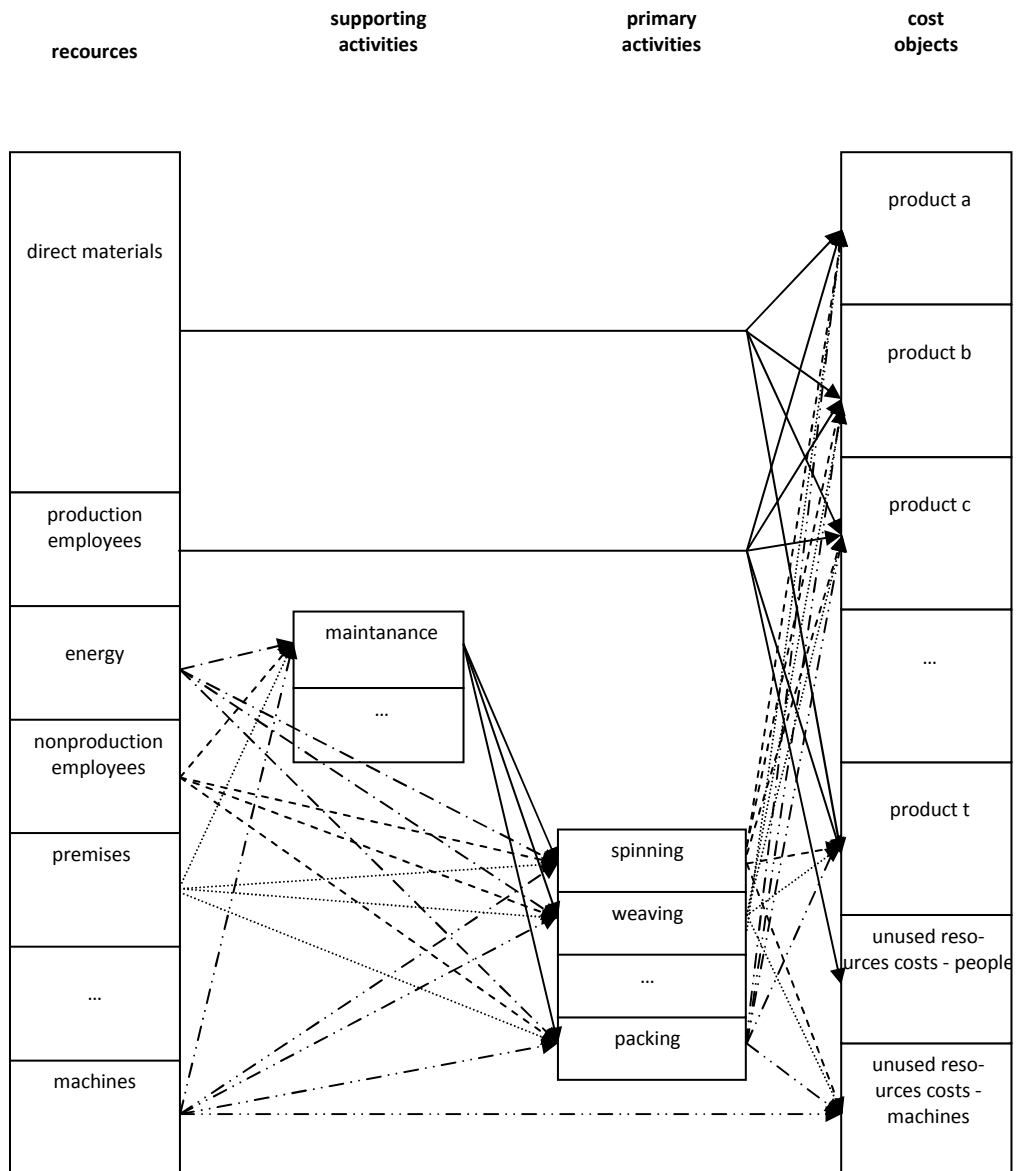


Figure 2. The simplified diagram of the functioning of the activity based costing in ALFA SA

As it was mentioned earlier in the paper activity-based costing model in ALFA SA is functioning in MS Excel spreadsheet and the Cost Calculation module, supported by information received from other modules. In the activity-based costing system in ALFA SA all the resources may be assessed in standard cost as well as in historical cost and it is highly possible to draw up the cost variance analysis for each product in accordance with the resources (thus the activity-based costing is interconnected with the elements of the standard costing).

The overall activities in the ABC system in ALFA SA are divided into supporting/primary/general activities. Neither value activities and non-value activities are selected in the activity-based costing in the company nor they are divided into strategic and operational activities. ALFA SA does not use activity-based budgeting (ABB). The company does not also use any other modern management accounting and management systems (just-in-time management, business process reengineering, continuous development, target costing, life cycle costing, balanced scorecard, economic value added, etc.).

3.4. The usage of the information received from activity-based costing

The generation and the implementation of the activity-based costing in ALFA SA enabled creating better information regarding costs and profitability for the inner customers in order to make accurate decisions for the production, sales and controlling results of these decisions. The implemented activity-based costing enabled drawing up of the profitability analysis of products, groups of products, customers and groups of customers and the selection of sales areas in the enterprise. All the information was used in ALFA SA to explain the process of generating costs and allowed the cause and effect analysis, using the benchmarking and outsourcing, undertaking activities aiming at cost reduction and providing accurate information regarding costs and profitability of products, customers, etc.

As far as the usage of the information received from the activity-based costing in ALFA SA is concerned, it should be emphasized that:

- the main users of the activity-based costing system in ALFA SA were the junior and senior managers of the company, i.e. Junior Managers of Production (four persons) and Senior Managers (Senior Production Manager and Senior Sales Manager). The president of the company did not use the information received from the activity-based costing. He was interested in more general information, namely costs and profitability of the whole company ALFA SA and production departments as well as controlling of the income and the expenses and the ownership transformations within the group of managed companies;
- the information from the ABC were mainly used for decisions regarding prices, the optimization of the sales plan and performance measurement and improvement (the information from ABC were significant for making these decisions). The information from activity-based costing were relatively

important in the areas such as: cost reduction, product design, customer profitability analysis, cost tailoring and inventory valuation for financial reporting;

- the information received from the activity-based costing were primarily used for taking decisions on the groups of products and products. These decisions concerned withdrawing unprofitable products and groups of products, limiting expenses for unprofitable products and groups of products, facilitating the sales of profitable products and groups of products and investing in new, potentially profitable products and groups of products;
- the information from ABC were also “frequently” used for the measurement and evaluation of particular activities and processes and “frequently” for performance measurement and evaluation of particular managers and employees, particular responsibility centers and the whole company.

All the people engaged in implementing of the ABC in ALFA SA presented a positive approach towards the system. All the efforts put in the implementation of the activity-based costing became a new challenge for the people involved, diverted from the daily routines, were a chance for displaying one's own skills in front of the superiors and enabled to strengthen one's position in the company. All the group emphasized that the managers, as the main recipients of the information from the ABC (especially those working in production units), presented a positive approach towards the implementation of the activity-based costing. They were, along with the management accounting specialists, the main beneficiaries of the implementation of the activity-based costing (the production managers eagerly used the ABC model as their bonuses greatly depended upon the results worked out by their departments and these results were measured in the ABC system).

The effects of the implementation of the activity-based costing system can be expressed through the selected opinions of the ALFA SA employees:

- “the implementation of the ABC in ALFA AS facilitated more accurate calculation of the costs of products”,
- “the implementation of the ABC resulted in more frequent usage of the information from the system by managers in production and sales departments”,
- “the implementation of the ABC allowed the controlling function to approach the production function”,
- “the changes in the job description and the organizational structure of the financial/controlling departments”,
- “when the ABC system was implemented the percentage of controlling employees' time devoted to data gathering decreased and the percentage of

time devoted to analytical activities in aid of raising the value of the enterprise increased”.

Despite the fact that the project was not accomplished in 100% (due to a limited application in the customer profitability analysis or the lack of the version of the system, which could function in the professional software), the information from the ABC was used to make decisions within different areas of the company performance. However, it was not expected to modify the activity-based costing in ALFA SA in the nearest future. Despite the fact that the present activity-based costing should be modified (expanded and updated), the climate, financial resources, time and other crucial tasks did not favor such changes.

In the beginning of the ALFA SA case study, it was emphasized that the Management Board, through the implementation of the activity-based costing, intended to cease using the method “management by trial and error” and base their decisions upon sound information regarding costs and profitability – it can be assumed that the process to a great degree ended in a success. When the ABC was implemented in the enterprise, the usable and valuable information for the decision-making processes (previously unobtainable) became accessible. This information includes: (a) precise information regarding costs of resources, activities and responsibility centers, (b) accurate data regarding the direct costs of products, (c) reliable information regarding products and groups of products profitability.

The ALFA SA case study, despite certain difficulties which occurred in the process of implementation and despite the fact that the implementation process shall be continued, proved that the implementation of the activity-based costing was beneficial for the company – among all the benefits several of them such as strengthening the relationships between the management accounting specialists and the managers, getting the managers interested in the information regarding the cost of resources, activities, products and the resources and activities drivers can be enumerated.

It can be concluded that the information from the activity-based costing in ALFA SA has already been used to make operational decisions and can be used to make strategic decisions in the future. Although the conclusions as for the usage of the ABC in strategic decisions cannot be drawn due to the limited time devoted to the analysis of the ALFA SA case study, its suitability for short-term cost management is well-recorded.

However, the development and the maintenance of the ABC systems can be jeopardized and the most probable problems that may occur in the future may include:

1. leaving the company by the key person for the ABC project, i.e. the Controller (it is not certain if other employees shall be capable of taking the substantive supervision over the functioning of the ABC system, updating the system and involving other areas such as budgeting);

2. implementing activity-based costing with the use of EXCEL spreadsheet (apart from numerous advantages like small cost, widespread usage, the spreadsheet has its limits – highly individualized problem-solving system or low susceptibility for unauthorized modifications. In brief, the model prepared by one user can be used with great difficulty by the other user, who may not be knowledgeable enough and may “spoil” the model in the process);
3. the loss of interest in the ABC system by the President.

In the light of the above mentioned problems which may occur in the future, the statement that the development of the management methods in the company may describe a circle and change “from the management by trial and error into the management based on the reliable information and then from the management based on the reliable information back to the management by trial and error” made by the former Controller in ALFA SA may seem prophetic.

4. Factors influencing activity-based costing implementation and changes in management accounting systems following the implementation

It should be emphasized that in the summary of the ALFA SA case study the key motivator of the implementation of the new cost accounting system in the company was the managers' dissatisfaction with the information provided by the previous cost accounting system, which was explicitly expressed by the President addressing the Controller: “do something with the calculation model as the present one is not good”.

Three types of positive factors and one type of a negative factor influenced the process of the implementation of the innovations within the area of the management accounting (in this case on the implementation process of the activity-based costing in ALFA SA). They are as follows:

- motivators (having a continuous, long-term influence on the implementation of the innovations),
- catalysts (having a direct influence on the implementation of the innovations),
- facilitators (factors without which the implementation of the innovations would be impossible),
- obstructers (factors having a negative influence on the implementation of the innovations).

These factors had a joint influence in the process of activity-based costing implementation, thus promoting the process of innovations (the number of positive factors outweighs the number of negative factors). The list of the key factors influencing the activity-based costing implementation in ALFA SA is presented in table 1.

Table 1: Factors influencing the ABC implementation in ALFA SA

type of factor	factor
motivators	the increase of competitiveness and market strategy production strategy (the increase of diversity and complexity of products – the customers began to demand unconventional products, in short batches) the need for information reported by the managers inaccuracy of data received from the present cost accounting
catalysts	in-service training in the area of cost accounting post-graduate studies undertaken by the Controller
facilitators	the management board support (the presidents' "blessing" and giving a "free hand") knowledge transfer into the company (in-service training) Controller's level of knowledge in the area of new cost accounting systems susceptibility to fashion and trends sufficient resources medium-sized company, medium level of complexity of processes, "everybody does everything", it is difficult to find persons potentially involved in the controlling implementation who would be proficient in the narrow part of the activity solely good general condition of the company, the usage of the productive capacity up to 100%
obstructers	corporate culture objecting any changes (according to the employees of the company: "nobody has the time to get involved in tasks needed to have been done yesterday", "the company has no time and money for facilitating the process of time and money management", "the initial state – management by trial and error, it is good but no one knows why") insufficient level of knowledge of the senior management of the company

Two aspects of changes in management accounting in ALFA SA could be observed after the activity-based costing had been implemented, namely: methodological changes and institutional changes. The above changes were presented in Table 2.

It should be highly emphasized that the employees of the company played the key part in the process of activity-based costing implementation in ALFA SA. Both the managers and the management accounting specialists were fully prepared to question current cost accounting system in the company and to plan and implement a new and better system. The managers (primarily the Management Board) questioned the quality of information delivered by the previous costs accounting system and the management accounting specialists (the Controller and his team) responded to the needs by activity-based costing implementation. The management accounting specialists in ALFA SA were fully aware of the changes in the market and the production process and of the methods of activity-based costing/activity-based management (ABC/M). Consequently, they managed to adapt the newest cost accounting tools inevitable to solve the problems, which occurred in the company.

Table 2: The changes in management accounting in ALFA SA after ABC implementation

area of changes	before ABC implementation	after ABC implementation
methodological changes (new tools in management accounting)	decision- making through „ <i>management by trial and error</i> ”	decision-making based on numerical data from ABC system
	low accuracy of direct cost tracing to products	high accuracy of direct cost tracing to products
	full absorption costing with indirect cost settling „ <i>using the method direct costs + X</i> ”	activity-based costing with indirect cost allocation according to various costs drivers
	costs established only for a group of products	costs established for products as variable cost according to activities and resources plus fixed cost according to activities and resources
	profitability analysis of the whole company and very inaccurate analysis of products profitability	profitability analysis of the whole company, products, groups of customers and customers, etc., established basing on activity-based costing
	no planning of the production capacity in order to determine its influence on the unit price (costs of unused resources not specified)	costs of products calculated for normal production capacity (costs of unused resources allocated to profit and loss account)
institutional changes	Controller supervised by Chief Accountant	Controller not supervised by Chief Accountant, directly supervised by President
	management accounting function distant from production and sales function	management accounting function close to production and sales function
	low approach to information delivery needed for decision-making	higher approach to information delivery needed for decision-making
	no specified responsibility centers	specified centers responsible for costs and profits
	information from the management accounting rarely used by the managers of production, sales and other positions in the company	information from the management accounting frequently used by the managers of production, sales and other positions in the company

5. Conclusion

Based on the research carried out in ALFA SA the following conclusions shall be drawn:

1. The most significant, continuous and long-term factors which greatly influenced the activity-based costing were the need for information reported by the managers, inaccuracy of data received from the previous costing system, the increase of products variety and customers' demands and finally the increase of competitiveness.
2. The catalysts having direct influence on the implementation of innovations were in-service training in the area of costs accounting and the post-graduate studies undertaken by the Controller.
3. In the company, the four factors facilitating the implementation of innovations could be observed (without them, the implementation would not be possible): the management board support, knowledge transfer, resources accessibility and susceptibility to fashion and trends.
4. The research allowed selecting a group of variables, which had negative influence on the activity-based costing implementation. The most significant among them were organizational culture presenting negative attitude towards any changes and insufficient level of knowledge of junior and senior management.
5. The changes caused by the activity-based costing implementation in the company could be observed in two areas – methodological and organizational. The research showed the following, basic methodological changes: improvement of accuracy regarding costs accounting (direct and indirect), improvement of accuracy regarding the calculation of the costs of products, improvement of accuracy and frequency of use of the profitability analysis and the application of the information received from the ABC in decision-making processes.
6. The activity-based costing implementation revealed numerous organizational changes, which resulted from the process of implementation, such as closer connection between management accounting and other operational functions, more frequent transfer of information for decision-making processes and more frequent use of the information from the management accounting by the managers. The supervision over the Controller was shifted from the Chief Accountant to the President of the company.
7. In the conclusion, it should also be emphasized that the managers as well as the management accounting specialists of the company were prepared to question the current costs accounting and to plan and implement the new and better system. The managers questioned the quality of information provided by the previous system of cost accounting and management accounting specialists responded by activity-based costing implementation. The management accounting specialists

were aware of the changes occurring in the market and in the company as well as of new methods of cost accounting and cost management. Consequently, they managed to adapt new tools of cost accounting used in problem-solving processes, which occurred in the company.

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Appendix 1:

Survey Instrument

1. Company characteristics

- 1.1. Type of business
- 1.2. Basic scope of activity
- 1.3. Competition in the basic scope of activity
- 1.4. Origin of equity capital
- 1.5. Sales direction
- 1.6. Number of employees

2. Characteristics of company's cost accounting

- 2.1. Who determines cost accounting?
- 2.2. What is the structure of costs?
- 2.3. How has, over the last ten years, changed the indirect costs share in the total costs?

3. Company's attitude towards ABC

3.1. ABC implementation was mainly influenced by:

	no influence	little influence	moderate influence	large influence	crucial influence
need for cost reduction and performance improvement					
changed management information needs					
need for improvement of control					
dissatisfaction with existing cost system					
increased competition					
headquarters' demands					
desire to gain new markets					
change of strategy					
availability of financial resources					
change in organizational structure					
availability of human resources					
implementation of new technologies					
change of management					
favorable attitude among employees					
other					

4. General information on ABC system

- 4.1. Who initiated ABC implementation?
- 4.2. How long has ABC been operating?
- 4.3. Who aided ABC implementation?

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4.4. How many employees from different departments have been involved in the implementation?

4.5. How many employees currently (after implementation) maintain ABC system?

4.6. Has the company, after ABC implementation, quit the existing cost accounting?

4.7. How do you generally evaluate ABC implementation?

4.8. What were the basic problems the company experienced during implementation:

	no problem	little problem	moderate problem	large problem	very large problem
high labor input during ABC implementation and operation					
insufficient knowledge of ABC among employees					
problems with model (selection of activities, drivers, etc.)					
lack of adequate IT resources					
high cost of ABC implementation and operation					
lack of support from management/head office etc.					
other priorities (implementation of ISO, TQM, ERP, etc.)					
other					

5. Structure of ABC system

5.1. How does IT model of ABC operate?

5.2. How is data from financial accounting system and other IT systems transferred to IT model of ABC?

5.3. ABC system has the following number of elements:

	1-5	6-20	21-100	101-500	501-
resources					
resource drivers					
activities					
activity drivers					
cost objects (products, customers, etc.)					

5.4. Is there in ABC system a hierarchy of activities (e.g. activities on the level of product unit, batch of products, type of products, company)?

5.5. How much of calculations in ABC system is there in your company for cost objects:

	1-5	6-20	21-100	101-500	501-
products					
groups of products					
customers					

groups of customers					
sales regions					
distribution channels					
organizational units					
projects					

5.6. How many of profitability analyses are prepared for the following cost objects:

	1-5	6-20	21-100	101-500	501-
products					
groups of products					
customers					
groups of customers					
sales regions					
distribution channels					
organizational units					
projects					

5.7. Are fixed and variable costs isolated in indirect costs?

5.8. Are unused output capacity and their costs isolated?

5.9. Is ABC modified to mirror changes in the company and environment?

6. ABC information use

6.1. Who uses ABC information:

	no	rarely	sometimes	often	very often
top management					
sales and marketing departments					
basic departments (e.g. production)					
accountants					
management accountants					
other divisions					

6.2. How important is ABC information for managers:

	not important	slightly important	quite important	important	very important
cost reduction					
price decisions					
budgeting (ABB)					
performance measurement and improvement					
sales plan optimization					
customer profitability analysis					
cost modeling (e.g. sensitivity analysis)					
goods and services designing					
inventories valuation (for financial reporting)					
other					

6.3. For what kind of decisions profitability analyses of ABC are used:

	liquidation	input restraint	development	investment in new
products				
groups of products				
customers				
groups of customers				
sales regions				
distribution channels				
organizational units				
projects				

6.4. Are measurement and evaluation of achievement based on ABC:

	no	rarely	sometimes	often	very often
measurement and evaluation of activities and processes					
company performance measurement and evaluation					
responsibility centers performance measurement and evaluation					
management and employee performance measurement and evaluation					

6.5. Is in ABC division into:

- value-added activities/non-value-added activities,
- support activities/primary activities/general activities,
- products unit activities/batch of products/type of products/company,
- strategic activities/operational.

6.6. Is there in your company activity based budgeting (ABB) and how does it operate?

6.7. In terms of customer relations, ABC:

	no	little	moderately	significantly	immensely
improves customer service cost control					
provides information for price policy formulation					
provides information for marketing strategy development					
provides information for customer policy formulation					
provides a basis for negotiations with customers					
provides a basis for giving up customers					

6.8. Are modern methods of management, other than ABC, used in your company?

6.9. Do you project, in the following year, any modifications of ABC system in your company?