Introduction

LACO Information Services NV is a Belgian software house, established in 1986. As Quality Partner of SAS Institute, our services are directed at application Development, technical support and personal education. For one of our clients in the distribution sector, we developed a ABC application.

Some important evolution in the internal and external enterprise environment have increased the importance of accurate cost information. On the one hand, the competition struggle increased so much that enterprises cannot afford any longer to be uninformed about the exact cost price of their products. On the other hand, product differentiation and the introduction of new techniques in the production process result in a modification of the cost structure, mainly lower direct costs, but higher indirect or overhead costs. The manager, who wants to have a detailed and more accurate view of the costs, no longer finds the answers in the traditional cost price systems, which focus on the external financial reporting. These systems pay to much attention to the historical costs, where unused capacity is allocated to the products and where the cause and effect principle of the indirect costs is overlooked.

Using traditional systems, the manager still has a lot of unanswered questions:

* What is the cost of complexity?
* What is the cost of fall-out, waste?
* How much is a 10% improved delivery confidence worth?
* What is the cost of unused capacity and where is it located?
* Where do I have to focus?
* Must the products be redesigned?
* Are the overhead cost too high?
* What are the opportunities for cost reduction?
* Which products / clients are not profitable?
* Must the product-mix be changed?
* Which product is too expensive?
* Which market is neglected?
* Which resources are undermanned?
* Are we doing the right things?
* Are we doing things right?

The manager does not always receive relevant information. “My sales is decreasing, yet my warehouse cost increased with 20%”. If we look at the structure of the overhead cost, we can conclude that these costs follow the sales during the growing phase without any problems, but not during a stagnation or decrease.
**What is Activity Based Costing**

As a reaction to these dissatisfactions, a series of new techniques and concepts is developed. One of the trends in management accounting is defined as Activity Based Costing (ABC). Activity Based Costing start from the assumption that a lot of activities are present in an enterprise to support the production of products and services. A product is established by a series of activities, consuming resources. ABC traces the direct costs to the final product and allocates (if possible) all indirect or overhead costs to the products, through the activities that are needed to create the products. ABC forms the foundation for activity based management and business process reengineering. The three foundation stones of Activity Based Costing are resources, activities and products (or Cost Objects). Between these foundation stones there are drivers: between resources and activities are “resource drivers”, and between activities and cost objects there are “activity drivers”. These “drivers” can be measured in man-days, hours, volumes,...

![Figure 1 : ABC Cost Allocation](image)

The use of ABC can be summarised in 7 categories:
- Activity Analysis : mapping the activities to improve the production process
- Cost Driver Analysis : identification of the drivers which cause the highest cost
- Cost Reduction by activity decrease, elimination, selection and division
- behaviour accounting
- Strategic decisions
- Responsibility accounting and reporting
- Reallocation of resources
As figure 2 indicates, traditional systems allocate the cost to products, where as ABC allocates the costs, to cost objects, through the activities that were needed. Cost objects are not necessarily products, but can also be product groups, departments, clients.

The successful impact of ABC depends not only on the careful implementation, but also on the characteristics of the enterprise. ABC can offer an important contribution in a company with the following identifications:

* the overhead cost form a relatively large part of the total cost.
* the overhead cost are allocated to the products, using a arbitrary ratio
* the usage of an overhead by the individual products is not proportional to the production volume of the products
* a strong competition struggle
* the existence of a large variety of products and production processes
* the are a large number of distribution channels and customers, for which different sales activities take place

**Definitions**

Resources are the means to create the products, such as personnel, material,... These resources carry costs, e.g. payments, gasoline for the machines, depreciation,... . Based on the behaviour of these costs, 3 cost types can be distinguished: variable or linear cost, middle long term cost and structural or fixed cost.
example variable cost fuel for a truck
middle long term labour cost
fixed depreciation

During the analysis of the cost price of an activity, the type can be an important instruments, since it is easier to modify the variable costs, then the structural costs.

Summary Accounts are groups of accounts from the exploitation account of the bookkeeping system. The lowest level in ABC are the summary accounts instead of the account numbers. This makes the ABC system conveniently and makes the definition of the allocation rules easier.

Activities are the actions performed during the process of creating a product. A group of activities is called a department.

A cost driver is the factor which, in case of modification, causes a change in the cost of the activity. Each activity has only one cost driver. Not only are they used the quantify an activity, but also to calculate the unit price for each activity.

A cost pool is a group of costs that have the same cost driver, so using the same algorithm during the allocation to activities. Its simplifies the allocation by taking different costs together.

Cost objects allow the analysis of costs, and can be defined as each activity, part or group of activities for which a separate cost determination is required, in other words a product or service.

During the allocation steps, statistics and allocation rules are used. The allocation rules indicate the starting point in each allocation step, and defines how the costs must be allocated by indicating the cost pool or the activity (direct allocation), or by using a statistic to divide the cost to different cost pools and/or activities. Statistics can be expressed in terms of percentages, volumes or can be calculate from the amount of some costs during the allocation (derived statistics).

The term distribution centre is not ABC related, but it is implemented in the application because each DC can considered to be an independent business unit. Idem for product group that forms a group of products.

A Calculation Example

The example shows a simplified situation with
* 4 type of resources : fuel, depreciation repair and salary cost,
* 1 cost pool : spotter
* 2 activities : discharge and load.

Using percentage statistics, the cost of fuel, depreciation repair and repair are allocated to different cost pools.
In the next step, the cost pool is allocated to the activities using a volume statistic. The salary cost does not need an intermediate cost pool, but is allocated directly to the activities using a the hour registration for each activity. Once all the costs are allocated to the activities, the unit price for each activity can be calculated using a driver statistic.

**A Calculation Example (1)**

<table>
<thead>
<tr>
<th>Resources</th>
<th>Fuel</th>
<th>Depreciation</th>
<th>Repair</th>
<th>Salaries</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>10.000</td>
<td>2000</td>
<td>50.000</td>
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<table>
<thead>
<tr>
<th>Cost Pools</th>
<th>Spotter</th>
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<table>
<thead>
<tr>
<th>Activities</th>
<th>Discharge</th>
<th>Load</th>
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</table>

**A Calculation Example (2)**

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<tr>
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**A Calculation Example (5)**

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**A Calculation Example (6)**

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<th>Load</th>
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</thead>
</table>

**A Calculation Example (7)**

<table>
<thead>
<tr>
<th>Resources</th>
<th>Discharge</th>
<th>Load</th>
</tr>
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<tbody>
<tr>
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<td>13.200</td>
<td>16.800</td>
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<table>
<thead>
<tr>
<th>Cost Pools</th>
<th>Driver</th>
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<tbody>
<tr>
<td></td>
<td>1.000</td>
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</tbody>
</table>

| Unit Price | 13.2 Fr. | 14 Fr. |
Our ABC Package

The application consists of 4 major steps:
1. General parameters and version definition
2. Allocation before ABC
3. Allocation ABC
4. Allocation cost object

General parameters are those parameters, that must be defined only once, when starting up the application. The versions play a very important role in the entire application. They give the power to the system, not only to perform allocations on the actual costs, but also to perform simulations, so the manager can predict what will happen if some items in the structure modifies, e.g. outsourcing of activities, elimination of a product...

The allocation before ABC prepares the data to be used in the ABC allocation. The input data comes from the exploitation account, where sometimes, bookings are made incorrectly. Instead of changing the bookkeeping, the corrections are performed in our application. Secondly, individual costs are summarised to the summary accounts, that form the bases for the allocation.

The ABC allocation uses the summary accounts (resources), and allocates them to the activities, using the resource drivers (or cost drivers). In some cases intermediate cost pools are used, while in other cases, the amounts of the summary accounts are directly passed to the activities.

The last step is the allocation to the cost objects, based on the amounts of the activities, which are grouped to or split up into different cost objects.
Each step has its own reports, showing input values or calculated results of the allocation step. (See further)

In addition to the ABC concept, the application offers some extra functionalities:

- multi-platform, network solution
- multi-language
- multi-dimensional allowing comparison of sides, simulation version, product groups, and periods
- Upload interface for external data. Data available on external systems can be loaded into the system through a special user interface, so the manual data entry is limited.
- Advanced simulation module by defining versions on different levels (definition of ABC structure, data input, statistics and allocation rules, calculation of cost objects), so the duplication of the data is strictly minimised with a guaranty of data consistency.
- Parameter solution. The basic definitions, statistics and allocation rules are entered as parameters into the system, so the system is supplier independent.
- Derived statistics. Not all statistics are known during the data entry. The system offers the possibility to calculated the value of the statistics during the allocation, based on temporary, intermediate results.

**Reports**

The reports, offered by the application can be split into 3 categories.

The first category is used to control the allocation process, by presenting the incoming cost analysis, and showing reports about the reconciliation procedure (have all the costs been allocated?). Theoretically, these reports have nothing to do with ABC, but using a application to perform an allocation, these reports are helpful to control the human factor, mainly the data entry.

The most important reports, are those concerning the ABC analysis. These reports present the costs per activity, cost object, resource, both global and detail.

Last, but not least, there are the benchmarking reports. These reports allow us to perform comparisons between activities, products, costs for the different DCs and versions. The option exists to select a DC or version as reference point, instead of using the totals, for the comparison. Using the export possibilities to a spreadsheet software, the user can make his own graphical presentations.

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Activity Based Costing

A LACO Application

Solange De Bondt
Kristien Smets

SEUGI 1996 - Hamburg
Importance of Cost Information

- Competition Struggle
- Product Differentiation
- Raising Overhead Costs

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Traditional Cost Accounting

- Unanswered questions of Management
  - What is the cost of complexity?
  - What is the cost of fall-out, waste?
  - ...

- No relevant information for management
  Overhead cost follow the sales in the growing phase
  ... but not when sales stagnates or decreases!
Activity Based Costing

Resources

Activities

Products

SEUGI 1996 - Hamburg
Definitions

- Resources
- Summary Accounts
- Cost Type & Characteristics
- Activity - Driver - Department
- Statistics
- Cost Pool
- Cost Object - Driver
- Distribution Center - Product Group
## A Calculation Example

### Resources

<table>
<thead>
<tr>
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</tbody>
</table>

### Cost Pools

- Spotter

### Activities

- Discharge
- Load

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SEUGI 1996 - Hamburg
A Calculation Example

Resources
- Fuel: 10,000
- Depreciation: 2,000
- Repair: 50,000
- Salaries: 50,000

Cost Pools
- Spotter: 6,000
  - Discharge: 500
  - Load: 1,500

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A Calculation Example

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<td>10.000</td>
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<td>50.000</td>
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</table>

Cost Pools

- Spotter: 8.000
  - 500 hours

Activities

- Discharge: 3.200
  - 10.000
  - = 13.200

- Load: 4.800
  - 12.000
  - = 16.800

SEUGI 1996 - Hamburg
## A Calculation Example

### Resources

<table>
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<th>Cost Pools</th>
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<th>Discharge</th>
<th>Load</th>
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<tbody>
<tr>
<td>Driver</td>
<td>1.000</td>
<td>13.200</td>
<td>16.800</td>
</tr>
<tr>
<td></td>
<td>1.200 Pallets</td>
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</table>

### Unit Price

- **13,2 Fr.**
- **14 Fr.**
Some Reports

- Cost Analysis
- Activity Analysis
- Cost of one Activity
- Cost Object Analysis
- Benchmarking

...
Our ABC Package

- Multi Platform - Network
- Multi Language
- Automatic Upload of external Data
- Link with MS/Office Products
- 4 dimensional Analysis - Benchmarking
- Parameters are the Key
- Advanced Simulation Module
- Statistics

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Time for a Demo