Faculty of Economics and Social Sciences
Chair for Accounting, Auditing and Management Control
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International Summerschool
“Innovations in Public Services Design and Delivery”
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Activity Based Costing in the Public Sector
Preface

I. Cost Accounting vs. Corporate Accounting

II. Design of Cost Accounting Systems

III. Traditional Product Costing Approach vs. Activity based Costing

IV. Activity based Costing in the Public Sector

V. Summary
Objectives

• Acquisition or updating of knowledge
  a) about the need for cost accounting, their position in the company's accounting system and their importance for management
  b) on the design of cost accounting systems, and the traditional product costing approach

• Learning and Understanding
  a) the deficits in the overhead calculation, and the reasons for activity based costing (ABC)
  b) the logic behind ABC and the effects of ABC

• Ability
  a) to recognize and describe areas of application for ABC
  b) to critically appreciate the decision-making benefits of ABC
References


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V. Summary
I. Cost vs. Corporate Accounting

Company - overall view (simplified – flows of goods only)

- Add flows of money
- Characterise scope of – financial accounting (FA) and scope of cost accounting (CA)
- Modify the entity model from goods production to pure service delivery

Management systems

Execution system

Procurement
- Cash
- Work forces
- Operating resources
- Materials
- …

Production

Sales

Storage unfinished goods

Storage finished goods

State

Capital Market

Procurement market

Sales market

(Lorson/Schweitzer, 2008)
I. Cost vs. Corporate Accounting

**Corporate Accounting** (business accounting, operational accounting)

- **Function**: Tools for planning, managing, controlling and monitoring.

- **Definition**: All procedures for the numerical recording and monitoring of the entire business activity.

- **Tasks**:
  - Documentary recording,
  - Charging and
  - Evaluation of all quantity- or value-related business transactions.

- **Bases**: Rules or conventions how to model transactions.
I. Cost vs. Corporate Accounting

Corporate Accounting (simplified)

- Financial Accounting
- Management Accounting and Management Control

Subsection

Financial Reporting

Objectives

- Accountability / Stewardship
- Decision usefulness for investors
- Ensuring profitability, rentability and value creation
- Decision usefulness for managers

Instruments

Financial Statements
(single, separate, consolidated)

Management Commentary

Cost accounting

Budgeting
Portfolio Investments
Sustainability

[Budget reports]
Tasks and Exercises

Relationship between Financial Accounting and Management Accounting in Different National Settings

• Are financial and management accounting closely related in
  • Germany
  • Italy
  • Spain

For example (with respect to cost accounting):
• Are there differences between costs and expenses?
## I. Cost vs. Corporate Accounting

### Ultimate Key Performance Measure (net profit/loss for the period)

<table>
<thead>
<tr>
<th>Starting Point ➔ Financial Accounting</th>
<th>Starting Point ➔ Cost Accounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues – Expenses</td>
<td>Operating Revenues – Operating Costs</td>
</tr>
<tr>
<td>= Financial Accounting Performance</td>
<td>= Cost Accounting Performance</td>
</tr>
<tr>
<td></td>
<td>+ other revenue – other expenses</td>
</tr>
<tr>
<td></td>
<td>= Net Comprehensive Income of the Period (Financial Statements)</td>
</tr>
</tbody>
</table>

**Caveat:** Primarily, management steers on cost accounting performance. This is determined at least monthly.

(Lorson/Schweitzer, 2008)
Questions

What are the key differences between

- goods and
- service
producing (public) entities?

What is the core area of cost accounting (or what is scoped out)?
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V. Summary
Cost Accounting Systems consist of three pillars

**INPUT esp. from**
Financial bookkeeping

- **Nature of Cost Accounting Component**
  - What costs have been incurred?
  - Indirect costs
  - Direct costs

- **Cost Center Accounting Component**
  - Where have the costs been incurred?
  - Where have the costs been incurred?

- **Cost Object Accounting Component**
  - What have the costs been incurred for?
  - Product costs per unit
  - Profit & Loss Statement

(Lorson/Schweitzer, 2008)
II. Design of Cost Accounting Systems

Cost accounting system – Schematic flow of information in a

Nature of Costs Accounting

- raw materials
- auxiliary and operating materials
- wages
- salaries
- social costs
- maintenance costs
- taxes, fees
- ...

Cost Center Accounting (overhead costs)

- material costs
- manufacturing costs

Cost Object Accounting (total & per unit for each product)

- direct material costs
- indirect material costs
- direct manufacturing costs
- indirect manufacturing costs
- direct special costs
- production costs
- administration costs
- distribution costs
- total production (prime) costs

Calculation ratios

- indirect costs per Unit
- direct costs per unit
- direct special costs

Profit / Loss

- sales / price per unit for each cost object (product)
- Profit / loss of the period
- P / L per unit

(Lorson/Schweitzer, 2008)
Check-backs

Questions

Describe the accounting design of a cost accounting system?

Enumerate typical cost categories within each subsection of a cost accounting system!
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V. Summary
## Overhead Calculation – Principle

<table>
<thead>
<tr>
<th>Cost Type</th>
<th>Calculation</th>
<th>Percentage Of</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct material costs</strong></td>
<td>$= Material costs</td>
<td>$= Material costs</td>
</tr>
<tr>
<td><strong>Indirect material costs</strong></td>
<td>As a percentage of direct material costs</td>
<td></td>
</tr>
<tr>
<td><strong>Direct manufacturing costs (wages)</strong></td>
<td>$= Manufacturing costs</td>
<td>$= Manufacturing costs</td>
</tr>
<tr>
<td><strong>Indirect manufacturing costs</strong></td>
<td>As a percentage of direct manufacturing costs</td>
<td></td>
</tr>
<tr>
<td><strong>Direct special manufacturing costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Administration (overhead) costs</strong></td>
<td>As a percentage of production costs</td>
<td>$= Administation and Distribution (overhead) costs</td>
</tr>
<tr>
<td><strong>Distribution (overhead) costs</strong></td>
<td>As a percentage of production costs</td>
<td></td>
</tr>
<tr>
<td><strong>Direct special distribution costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total production costs (prime costs)</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Direct and indirect costs are separated to better understand the composition of total production costs.
# Overhead Calculation – Example (in EUR)

<table>
<thead>
<tr>
<th></th>
<th>EUR</th>
<th>Overhead rates</th>
<th>Product A</th>
<th>Product B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct material costs</td>
<td>49000</td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Indirect material costs</td>
<td>24500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material costs</td>
<td>73500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct manufacturing costs (wages)</td>
<td>150000</td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Indirect manufacturing costs</td>
<td>91000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct special manufacturing costs</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manufacturing costs</td>
<td>241000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production costs</td>
<td>391000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administration (overhead) costs</td>
<td></td>
<td>42900</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Distribution (overhead) costs</td>
<td></td>
<td>20000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct special distribution costs</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total production costs</td>
<td>453900</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Overhead Calculation – Example

Discuss the results of this calculation beyond the following background!

<table>
<thead>
<tr>
<th>Procurement</th>
<th>Production</th>
<th>Administration</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Cost Units</td>
<td>2 Cost Units</td>
<td>1 Cost Unit</td>
<td>1 Cost Unit</td>
</tr>
<tr>
<td>Ordering/handling</td>
<td>Quality check and control</td>
<td>Workshop 1</td>
<td>Workshop 2</td>
</tr>
</tbody>
</table>

### Product A
- Consists of 1 raw material and 1 component;
- No need for quality control and testing;
- Encompasses two production steps;
- Introduced into the market 10 years before; self-running best seller.

### Product B
- Is produced based on 1 raw material;
- Need for quality control and testing;
- Is produced in one single step;
- Just introduced into the market during the current period.
Overhead Calculation – Example

How should costs be allocated to product A and product B?
• Which cost categories?
• By which cost allocation bases?

<table>
<thead>
<tr>
<th>Procurement</th>
<th>Production</th>
<th>Administration</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Cost Units</td>
<td>2 Cost Units</td>
<td>1 Cost Unit</td>
<td>1 Cost Unit</td>
</tr>
<tr>
<td>Ordering/handling</td>
<td>Quality check and control</td>
<td>Workshop 1</td>
<td>Workshop 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product A</th>
<th>Product B</th>
</tr>
</thead>
</table>

### Cost structuring – traditional and activity-based view

<table>
<thead>
<tr>
<th>Procurement Cost Unit Ordering / Handling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wages &amp; Salaries</td>
</tr>
<tr>
<td>Energy</td>
</tr>
<tr>
<td>Depreciation</td>
</tr>
<tr>
<td>Maintenance costs</td>
</tr>
<tr>
<td>...</td>
</tr>
</tbody>
</table>

| # of orders?                              |
| # of different raw materials / processes |
| # of handling processes                   |
### III. Traditional Product Costing Approach

#### Overhead Calculation – traditional and activity-based view

<table>
<thead>
<tr>
<th></th>
<th>Product B</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>traditional</strong></td>
<td>ABC-perspective</td>
</tr>
<tr>
<td><strong>Direct material costs</strong></td>
<td>100</td>
</tr>
<tr>
<td><strong>Indirect material costs</strong></td>
<td>% bases: average # order; # handling; # quality tests per unit</td>
</tr>
<tr>
<td>= Material costs</td>
<td></td>
</tr>
<tr>
<td><strong>Direct manufacturing costs (wages)</strong></td>
<td>50</td>
</tr>
<tr>
<td><strong>Indirect manufacturing costs</strong></td>
<td>% basis: average manufacturing time per unit</td>
</tr>
<tr>
<td>= Manufacturing costs</td>
<td></td>
</tr>
<tr>
<td>= PRODUCTION COSTS</td>
<td></td>
</tr>
<tr>
<td><strong>Administration (overhead) costs</strong></td>
<td>% basis %?</td>
</tr>
<tr>
<td><strong>Distribution (overhead) costs</strong></td>
<td>% basis: average # advertisements per unit</td>
</tr>
<tr>
<td>= TOTAL PRODUCTION COSTS</td>
<td></td>
</tr>
</tbody>
</table>
III. Traditional Product Costing Approach

Objectives (& outcome) of Activity Based Costing

Better calculation than based on overhead rates

⇒ Preferred alternative: Based on cost drivers and volumes

Enhance information content of cost accounting information

⇒ Cost drivers can be managed
⇒ Understanding the production process

ABC ⇒ ABC/M (activity based costing & management)

ABC/M as a tool for efficiency improvements
III. Traditional Product Costing Approach

Summarizing

Industry sector – deficits of the traditional approach
- No cause-related cost allocation based on percentages on direct costs …
  - inadequate allocation of costs of cross-functional processes
  - organised around separate departments or cost centers
  - No visibility
    - of the costs that belong to their end-to-end workflow
    - of processes and their cost-drivers
- Error-prone cost allocation when the direct to indirect cost ratio declines

Service sector
- In the service sector direct costs are negligibly low

Public sector (more similar to service than industry sector)
  ➔ Traditional costing approach is not relevant
Questions

„Traditional“ (full) absorption costing product calculation
• Scope?
• Name the main objective(s)!
• Describe the scheme!
• Highlight the inputs needed!
• Discuss deficits!

Activity based costing
• Scope?
• Name the main objective(s)!
• Describe the scheme!
• Highlight the inputs needed!
• Discuss improvements!
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IV. Activity based Costing in the Public Sector - Examples

V. Summary
VI. Activity based Costing in Public Sector

The Language of ABC/M
Example: Back-office department of a license bureau, such as for driver or hunting licenses.

**Chart of accounts view**

<table>
<thead>
<tr>
<th>License Processing Department</th>
<th>Actual</th>
<th>Plan</th>
<th>Favorable (unfavorable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salaries</td>
<td>621,400</td>
<td>600,000</td>
<td>(21,400)</td>
</tr>
<tr>
<td>Equipment</td>
<td>161,200</td>
<td>150,000</td>
<td>(11,200)</td>
</tr>
<tr>
<td>Travel expenses</td>
<td>58,000</td>
<td>60,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Supplies</td>
<td>43,900</td>
<td>40,000</td>
<td>(3,900)</td>
</tr>
<tr>
<td>Use and occupancy</td>
<td>30,000</td>
<td>30,000</td>
<td>—</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>914,500</td>
<td>880,000</td>
<td>(34,500)</td>
</tr>
</tbody>
</table>

**Activity based view**

<table>
<thead>
<tr>
<th>License Processing Department</th>
<th>Key or scan licenses</th>
<th>Analyze licenses</th>
<th>Suspend licenses</th>
<th>Receive licenses inquiries</th>
<th>Resolve member problems</th>
<th>Process batches</th>
<th>Determine eligibility</th>
<th>Make copies</th>
<th>Write correspondence</th>
<th>Attend training</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>31,500</td>
<td>21,000</td>
<td>32,500</td>
<td>101,500</td>
<td>83,400</td>
<td>45,000</td>
<td>119,000</td>
<td>145,500</td>
<td>77,100</td>
<td>158,000</td>
<td>914,500</td>
</tr>
</tbody>
</table>

High ratio of personnel costs to total costs

Different allocation scheme (all costs allocated to activities / more or less to working hours)

(Cockins, 2007)
The Language of ABC/M – Technical issues

Activity analysis
- Based on job descriptions
- Based on interviews

Estimation
- Percentage of working time per activity
- Average time needed per activity
  - Individual estimation
  - Indirect approximation (total time/#)

Outputs
- Average standards of performance (SOP)
- Average cost per activity (cost recovery through fees?)
- Traces to the beneficiaries (senior citizens, beginning drivers …)
The Language of ABC/M

Example: Back-office department of a license bureau, such as for driver or hunting licenses.

- ABC/M view begins to resolve the deficiencies of traditional CA by
  - focusing on work activities
  - using an “action verb–adjective–noun” grammar convention, such as
    - “process building permits” or
    - “open new taxpayer accounts.”
  - a wording implying that activities can be enhanced through change, improvement, or elimination
  - substituting the chart of accounts through a chart of activities

(Cockins, 2007)
Decision usefulness of ABC-Information

What does it mean, if the following processes are eliminated by digitalization (e.g. in terms of resource consumption)?

<table>
<thead>
<tr>
<th>Activity based view</th>
<th>License Processing Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key or scan licenses</td>
<td>31,500</td>
</tr>
<tr>
<td>Analyze licenses</td>
<td>21,000</td>
</tr>
<tr>
<td>Suspend licenses</td>
<td>32,500</td>
</tr>
<tr>
<td>Receive licensee inquiries</td>
<td>101,500</td>
</tr>
</tbody>
</table>
ABC/M – Case study „State Road Maintenance Department“
Example: Back-office department of a license bureau, such as for driver or hunting licenses.

(Cockins, 2007)
### ABC/M – Case study „State Road Maintenance Department“

<table>
<thead>
<tr>
<th>Road surface</th>
<th>Lanes</th>
<th>Location</th>
<th>Total cost</th>
<th>Miles</th>
<th>Work activity</th>
<th>Unit cost per mile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt</td>
<td>4</td>
<td>Interstate</td>
<td>270,137,078.40</td>
<td>125,342</td>
<td>Total: - Cut grass - Install electronic signs - Fill potholes - Plow road - Paint stripes - Replace signs</td>
<td>2,155.20</td>
</tr>
<tr>
<td>Bituminous</td>
<td>2</td>
<td>Rural</td>
<td>29,783,384.10</td>
<td>43,578</td>
<td>Total: - Cut grass - Install electronic signs - Fill potholes - Plow road - Paint stripes - Replace signs</td>
<td>683.45</td>
</tr>
<tr>
<td>Asphalt</td>
<td>4</td>
<td>County</td>
<td>95,567,207.84</td>
<td>65,672</td>
<td>Total: - Cut grass - Install electronic signs - Fill potholes - Plow road - Paint stripes - Replace signs</td>
<td>1,455.22</td>
</tr>
</tbody>
</table>

(Cockins, 2007)
VI. Activity based Costing in Public Sector

Examples

- A city performs two lawn services for its taxpayers. It picks up leaves after residents rake them into the street, and it cuts the branches of trees that are close to street signs and power lines.

<table>
<thead>
<tr>
<th>Table 4 Activity data</th>
<th>Picking up leaves</th>
<th>Cutting trees</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABC overhead activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schedule pickups/cuts$^a$</td>
<td>30</td>
<td>100</td>
<td>130</td>
</tr>
<tr>
<td>Set up equipment (for pickups/cuts)$^b$</td>
<td>5</td>
<td>80</td>
<td>85</td>
</tr>
<tr>
<td>Drive routes (and pickups/cuts)$^c$</td>
<td>35,000</td>
<td>30,000</td>
<td>65,000</td>
</tr>
<tr>
<td>Dispose of leaves and branches$^d$</td>
<td>50,000</td>
<td>100,000</td>
<td>150,000</td>
</tr>
</tbody>
</table>

$^a$Number of trips scheduled.
$^b$Number of setups.
$^c$Number of miles driven.
$^d$Pounds dumped.

What field of ABC application could you imagine?
### Examples

**Areas of decision use of ABC information**

- Planning and budgeting
- Process/operations management
- Outsourcing decisions
- Products/services management decisions
- Restructuring or reorganization decisions
- Products/services development strategies and decisions
- Driving process improvement decisions
- Identify opportunities for improvement
- Linked to performance measures

What do you think about the decision usefulness of ABC in those areas?
Summarizing

The field of application for ABC is very broad ranging
• from „production tasks“ (e.g. road construction)
• To proper „bureaucatic services“ (e.g. grant/issue licenses).

The management input of ABC ranges
• From immediate action-relevant (e.g. process interfaces management)
• To first „impulses“ for reorganisations (e.g. outsourcing)

Caveat: Decisions with
• multi-period effects must be made with dynamic methods of investment calculation (never with one-period cost accounting methods);
• input resource (reduction) effects must be jointly taken with explicit decisions how to reduce or raise the inputs (mainly with respect to persons (to be/no longer) employed in those fields.
Questions

Give examples for ABC-application fields!

What are prerequisites of ABC application?

Critically discuss the management relevance of ABC (e.g. using a self-chosen example, that is analysed from all relevant perspectives)!
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V. Summary
Thank you very much for your attention!

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Dr. Ellen Haustein

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www.empaci.uni-rostock.de
I. Cost vs. Corporate Accounting

Company - overall view (simplified – flows of money added)

- Add flows of money
- Characterise scope of financial accounting (FA) and scope of cost accounting (CA)
- Modify the entity model from goods production to pure service delivery

Management systems

Execution system

- Procurement
  - Cash
  - Work forces
  - Operating resources
  - Materials
  - …
- Production
- Storage unfinished goods
- Storage finished goods
- Sales

Capital Market

State
I. Cost vs. Corporate Accounting

Company - overall view (simplified – flows of money added)

- Add flows of money
- Characterise scope of financial accounting (FA) and scope of cost accounting (CA)
- Modify the entity model from goods production to pure service delivery

Management systems

Execution system

Procurement
- Cash
- Work forces
- Operating resources
- Materials
- ...

Production

Storage unfinished goods

Sales

Analysis of flows of money and resources

Capital Market

State
I. Cost vs. Corporate Accounting

Company - overall view (simplified – adapted to service delivery)

- Add flows of money
- Characterise scope of financial accounting (FA) and scope of cost accounting (CA)
- Modify the entity model from goods production to pure service delivery

Management systems

Execution system

Procurement
- Cash
- Work forces
- Operating resources
- Materials
- ...

Production
- Sales / Distribution / Delivery

Sales market / Citizens

Procurement market

Capital Market

State
## Overhead Calculation – Example (in EUR)

<table>
<thead>
<tr>
<th></th>
<th>EUR</th>
<th>Overhead Rates</th>
<th>Product A</th>
<th>Product B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct material costs</td>
<td>49000</td>
<td>100.00%</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td>Indirect material costs</td>
<td>24500</td>
<td>50.00%</td>
<td>50.00</td>
<td>50.00</td>
</tr>
<tr>
<td><strong>Material costs</strong></td>
<td>73500</td>
<td>150.00%</td>
<td><strong>150.00</strong></td>
<td><strong>150.00</strong></td>
</tr>
<tr>
<td>Direct manufacturing costs (wages)</td>
<td>150000</td>
<td>50.00%</td>
<td>50.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Indirect manufacturing costs</td>
<td>91000</td>
<td>60.67%</td>
<td>30.33</td>
<td>30.33</td>
</tr>
<tr>
<td>Direct special manufacturing costs</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Manufacturing costs</strong></td>
<td>241000</td>
<td></td>
<td>80.33</td>
<td>80.33</td>
</tr>
<tr>
<td><strong>Production costs</strong></td>
<td>391000</td>
<td></td>
<td><strong>230.33</strong></td>
<td><strong>230.33</strong></td>
</tr>
<tr>
<td>Administration (overhead) costs</td>
<td>42900</td>
<td>10.97%</td>
<td>25.27</td>
<td>25.27</td>
</tr>
<tr>
<td>Distribution (overhead) costs</td>
<td>20000</td>
<td>5.12%</td>
<td>11.78</td>
<td>11.78</td>
</tr>
<tr>
<td>Direct special distribution costs</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total production costs</strong></td>
<td>453900</td>
<td></td>
<td>267.39</td>
<td>267.39</td>
</tr>
</tbody>
</table>
Overhead Calculation – Example / Product costing of A and B

Discuss the results of this calculation beyond the following background!

<table>
<thead>
<tr>
<th>Procurement</th>
<th>Production</th>
<th>Administration</th>
<th>Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Cost Units</td>
<td>2 Cost Units</td>
<td>1 Cost Unit</td>
<td>1 Cost Unit</td>
</tr>
<tr>
<td>Ordering/handling</td>
<td>Quality check and control</td>
<td>Workshop 1</td>
<td>Workshop 2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product A</th>
<th>Product B</th>
</tr>
</thead>
<tbody>
<tr>
<td># of orders</td>
<td># of handling processes</td>
</tr>
<tr>
<td># quality checks</td>
<td>time utilisation</td>
</tr>
<tr>
<td>time utilisation</td>
<td># advertising activities</td>
</tr>
</tbody>
</table>