Definitions 1

Controlling: management function of establishing benchmarks or standards, comparing actual performance against them and taking corrective action if required.

Management accounting: A major branch of accounting primarily concerned with providing financial and other information to parties internal to an entity for planning, control, and decision-making purposes.

Management Accounting: Collecting information from the financial accounting system and other financial data (such as budgets) and combining this information with statistical data (such as service outputs) to produce information which is useful for making managerial decisions.

Controlling = management accounting + (nonfinancial information systems) + ACTION
Definitions 2

Cost accounting: a part of management accounting which establishes budget and actual cost of operations, processes, departments or products and provides the analysis of variances and profitability

Cost: decrease of economical value which results in the decrease of assets or increase of liabilities

Revenue: increase of economical value which results in the increase of assets or decrease of liabilities

Cost: Consumption of assets (fixed assets, materials), labor, external services, etc. which results in revenue

Enterprise Information System

Enterprise Information Systems a technology platform that enables organizations to integrate and coordinate their business processes. They provide a single system that is central to the organization and ensure that information can be shared across all functional levels and management hierarchies.

Main components:

- ERP – Enterprise Resource Planning
- CRM – Customer Relationship Management
- Workflow & document management
- Data Warehouse
- Knowledge Management Systems
- Business Intelligence

SAP- Main Products

SAP ERP – transaction system
SAP SEM – Strategic Enterprise Management
SAP Enterprise Portal – workplace
SAP BW – Data Warehouse
SAP APO – Advanced Planning and Optimization
SAP CRM -Customer Relationship Management
SAP Exchanges

Source:SAP
Standard ERP systems’ characteristics

- **Standard functionality** – system has a set of standard functions which are delivered when one purchases a license.
- **Parametrization** – the way the system functions is determined by configuration parameters which are set up during the configuration process.
- **Openness** – there is a possibility of extending the system’s functionality by adding a new programming code or building an interface with other systems.

Most big and medium-sized enterprises in Europe are using some ERP system.

Integration - example

Most big and medium-sized enterprises in Europe are using some ERP system.
Cost accounting principles 1
Accounts numbers vary from country to country.

- PL:
  1. fixed assets
  2. cash and monetary investments
  3. accounts receivable and accounts payable
  4. raw materials
  5. costs by origin
  6. finished goods
  7. revenues and cost of goods sold
  8. equity

- US:
  1. asset accounts
  2. liability accounts
  3. equity accounts
  4. revenue accounts
  5. cost of goods sold
  6. expense accounts
  7. other revenue (ex. Interest income)
  8. other expense (ex. Income taxes)

Cost accounting principles – service company

Assets
- Accounts payable
- Costs by origin

Cost settlement
- Overhead costs (by cost centers)
- General costs (by cost centers)

Cost of goods sold
- Other costs P&L

SAP Controlling overview

Source: SAP
SAP Organizational structure

Area
- Financials (FI)
- Sales (SD)
- Controlling (CO)
- Material management (MM)

Organizational units
- Client
- Financials (FI)
- Company code
- Sales organization
- Plant
- Distribution channel
- Storage location
- Storage location

SAP Controlling integration – cost elements

FI (Financials)
- Chart of accounts
- 1010000000
- 4100000000
- 7200000000

CO (Controlling)
- Primary cost elements
- 6100000000
- 7200000000

Primary cost elements in CO are created based on G/L accounts in FI

SAP CO OM integration example

FI
- Accounts payable
- Costs by origin

CO
- Internal order (Profitability segment)
- Cost settlement

Cost objects
Internal order
Cost allocation
Cost center

COGS
SAP CO OM Integration – direct posting from FI

- Accounts payable
  - 1300 → 1300

- Materials
  - 1300 → 1300

- Cost
  - 4000000001

SAP CO OM Integration – posting from MM

- Materials issue document
  - 1000 kg of material X to cost center UG1000

- Automatic valuation and posting

- FI
  - 3030000001 → 4030000001
  - 2000 → 2000

- CO
  - Cost center UG1000
  - Postings Dt
    - Cost element 4000000001
    - Amount 1300
  - Cost element 4030000001
  - Amount 2000
  - Postings Ct
    - Cost element
    - Amount

SAP CO OM Integration – cost allocations

- Cost center UG1000
  - 1300
  - 2000
  - Order O000001
    - 3300

- Secondary cost element
  - G600000000

- Cost center UG1000
  - Postings Dt
    - Cost element 4000000001
    - Amount 1300
    - 4030000001
    - Amount 2000
  - Postings Ct
    - Cost element G600000000
    - Amount 3300

- Order O000001
  - Postings Dt
    - Cost element G600000000
    - Amount 3300
  - Postings Ct
    - Cost element
    - Amount

Allocation can be made with the use of primary cost elements (distribution) or secondary cost elements (assessment).
Company X is currently doing 2 projects:
- Building a warehouse
- Renovating a hotel

- Revenues and direct costs are collected on internal orders.
- The work is done by one construction department, which costs (indirect costs) are collected on the cost center.
- These costs are allocated to projects according to the workload in manhours. Workload is reflected by the statistical key figure.
- General costs are collected on cost center.

'System is a physical entity – a standalone installation of SAP. Typical environment consists of 3 systems:
- DEV – development system on which all configuration steps are made. No transactional data should be stored in that system.
- QAS – quality assurance system (test system) – used for testing of the configuration.
- PRD – production system – the system used in day-to-day operations.

During implementation process the configuration is copied from system to system with the use so called ‘transports’.

Client is a ‘logical’ entity in the ‘physical’ system. Most settings are client dependent however there are also some client-dependent settings. System warns when such settings are changed.

The number of available languages differs from installation to installation. German and English are installed by default.
Transaction is an executable program (function) in the system. You can execute it either by double-clicking it in the menu or by typing its name into the command field.

SAP – buttons:
- Enter
- Save
- One screen back
- One level back
- Exit (without saving)
- First
- Search
- Continue search
- Go to the first page (for reports)
- Go to the previous page
- Go to the next page
- Go to the last page
- Create new session
- Create shortcut on the desktop
- Help. Makes sense in 50%, helps solve the problem in 30% of the cases.
Company UG is currently doing 2 projects:
- Building a warehouse
- Renovating a hotel

- Revenues and direct costs are collected on internal orders.
- The work is done by one construction department, which costs (indirect costs) are collected on the cost center.
- These costs are allocated to projects according to the workload in mandays. Workload is reflected by the statistical key figure.
- General costs are collected on cost center.

Basic settings in the system

SAP organizational units:
- Company code: UG01
- Chart of accounts: CAPL
- Controlling area: UG01

SAP master data:
- Cost center standard hierarchy: UG_01
- Cost centers:
  - UG_DEP1
  - UG_GEN1
- Internal order type: UG01
- Internal order numbers: UG0000001, UG0000002
- Statistical key figure: UGMD

Organizational structure

Client is a standalone ‘logical’ system with its own tables and master data records (technically – in each table the client number is a part of table key)

Controlling area – basic CO organizational structure, reflecting cost accounting entity. It may consist of one or more company codes

Chart of accounts – is a set of accounts used by one or more company codes. Chart of accounts must include all accounts used in the company code. It may include some accounts not used in the specific company code.

Company code – each legal entity (enterprise) that makes its own financial statements
**Master data**

Cost centers are objects which reflect permanent cost allocation structures in the organization (e.g., Departments). Cost centers are gathered in standard hierarchy. Their main characteristics are:

- Only costs can be posted to the cost centers (revenues can be posted only statistically).
- Costs can be allocated from cost centers to other cost centers, orders, or CO-PA objects.
- Cost centers can be initiators in all allocation methods.
- Costs cannot be allocated from cost centers to G/L accounts.

**Cost centers’ maintenance**

Transaction: OKEON

**Master data**

Internal orders (orders) are CO objects which reflect temporary cost allocation entities (e.g., customer orders, projects, lots). Orders have no fixed hierarchy. Their main characteristics are:

- Both costs and revenues can be posted to an order.
- Orders (in the standard system) cannot be initiators in cost allocation methods.
- Costs can be settled from an order to:
  - Another order.
  - Cost center.
  - Material (production orders only).
  - CO-PA object.
  - G/L account.

Statistical key figures and activities are CO objects which are the base for cost allocation: e.g., man-hours, square meters.
**Order maintenance**

- Order type is a main steering parameter
- Transaction: KO04
- Settlement rule determines the settlement receiver and conditions

**Order type configuration**

- Transaction: SPRO displays the configuration menu (IMG)
- Number range
- Control indicators determine which operations are allowed for this order type
- Settlement profile determines how the order can be settled
- Status profile determines which statuses an order can be in

**Settlement profile**

- What will be allowed to be settled
- Possible receivers of the settlement
- Settlement rules
- Allocation structure determines with what cost element the costs will be allocated
- Source structure allows to choose what to allocate in the settlement rule of an order
### Case – primary postings

#### Direct costs of building a warehouse:

<table>
<thead>
<tr>
<th>G/L and cost element number</th>
<th>Cost by origin name</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>411100</td>
<td>Material consumption</td>
<td>300 000</td>
</tr>
<tr>
<td>429020</td>
<td>External services – building</td>
<td>150 000</td>
</tr>
<tr>
<td>431500</td>
<td>Production wages</td>
<td>100 000</td>
</tr>
</tbody>
</table>

A phase 1 of a project was invoiced with net amount of 600 000, G/L account: 703000

#### Direct costs of renovating a hotel:

<table>
<thead>
<tr>
<th>G/L and cost element number</th>
<th>Cost by origin name</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>411100</td>
<td>Material consumption</td>
<td>120 000</td>
</tr>
<tr>
<td>431500</td>
<td>Production wages</td>
<td>90 000</td>
</tr>
</tbody>
</table>

A phase 1 of a project was invoiced with net amount of 300 000, G/L account: 703000

#### Indirect costs of construction department:

<table>
<thead>
<tr>
<th>G/L and cost element number</th>
<th>Cost by origin name</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>411100</td>
<td>Material consumption</td>
<td>20 000</td>
</tr>
<tr>
<td>431100</td>
<td>Wages</td>
<td>100 000</td>
</tr>
<tr>
<td>469400</td>
<td>Other costs</td>
<td>230 000</td>
</tr>
</tbody>
</table>

#### General costs:

<table>
<thead>
<tr>
<th>G/L and cost element number</th>
<th>Cost by origin name</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>411110</td>
<td>Small tools</td>
<td>50 000</td>
</tr>
<tr>
<td>429040</td>
<td>Telecommunications</td>
<td>20 000</td>
</tr>
<tr>
<td>431100</td>
<td>Wages</td>
<td>120 000</td>
</tr>
<tr>
<td>465000</td>
<td>Banking services</td>
<td>5 000</td>
</tr>
</tbody>
</table>
### Standard reports

For cost centers

For internal orders

### Indirect cost allocation

Indirect costs are allocated to the projects according to the time consumption in mandays.

<table>
<thead>
<tr>
<th>Cost center</th>
<th>Order UG0000001 (warehouse)</th>
<th>Order UG0000001 (hotel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UGDEP1</td>
<td>420 000 (500 md)</td>
<td>340 000 (340 md)</td>
</tr>
<tr>
<td></td>
<td>420 000 (250 000)</td>
<td>170 000 (420 000)</td>
</tr>
</tbody>
</table>

### Creating assessment cycle

Transaction KSU1

Cycle header
Creating assessment cycle

- Cost element
- What to allocate
- How to allocate
- Senders and receivers specification
- Allocation base specification

Posting the statistical key figure

- Enter receivers, key figure and value
- Transaction: KB31N

Executing a cycle

- Enter cycle name and execute in test and then real run
- Transaction: KSU5
Order settlement to G/L account

Check the settlement rule in order master data

Choose order, period and run the settlement

Choose individual processing for one, or collective processing for a group of orders

CO-OM basic planning

Plan versions

In SAP one can define many plan versions. For example:
- optimistic,
- realistic,
- pessimistic.
Version 0 is obligatory

CO-OM basic planning functions

Planner profile and planning layouts
Planning layout determines the format and visibility of fields that will be subject to planning. Planning layouts are grouped in so called planner profiles.

Two layouts from planner profile SAPEASY
You choose a planner profile with transaction KP94
Cost plan for cost center

Plan of indirect costs of construction department:

<table>
<thead>
<tr>
<th>G/L and cost element number</th>
<th>Cost by origin name</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>411100</td>
<td>Material consumption</td>
<td>200 000</td>
</tr>
<tr>
<td>469400</td>
<td>Other costs</td>
<td>2 000 000</td>
</tr>
<tr>
<td>431100</td>
<td>Wages</td>
<td>1 000 000</td>
</tr>
</tbody>
</table>

Cost center planning

Transaction KP06:
Enter version, period, cost center(s) and cost elements to be planned

Enter planned costs

Cost plan for order

Plan of direct costs of building a warehouse:

<table>
<thead>
<tr>
<th>G/L and cost element number</th>
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<td>600 000</td>
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<td>431500</td>
<td>Production wages</td>
<td>500 000</td>
</tr>
</tbody>
</table>
**CO-PA – Profitability analysis**

- CO-PA is suitable mainly for the enterprises that sell many items to many customers, using sophisticated sales organization.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer</td>
<td>000001 - Kowalski</td>
</tr>
<tr>
<td>Product</td>
<td>90067 - Chewing gum</td>
</tr>
<tr>
<td>Distribution channel</td>
<td>01 - traditional</td>
</tr>
</tbody>
</table>

- say the organization sells 1000 products for 2000 customers, using 2 distribution channels (internet and traditional).
- Profitability of a certain customer? 2000 accounts.
- Profitability of a certain product? 1000 accounts.
- Profitability of a certain product to a certain customer? 2000 * 1000 = 2 000 000 accounts.
- Profitability of a certain product by distribution channel? 2 * 1000 = 2000 accounts.
- Profitability of sales of a certain product to a certain customer by distribution channel? 4 000 000 accounts.

**CO-PA – posting logic**

CO-PA organizes revenue and cost data in a way that such complexity is manageable.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value field</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>15</td>
</tr>
<tr>
<td>COGS</td>
<td>5</td>
</tr>
<tr>
<td>Overhead cost</td>
<td>3</td>
</tr>
<tr>
<td>Profit</td>
<td>15 - 5 - 3 = 7</td>
</tr>
</tbody>
</table>
**CO-PA – summarization levels**

<table>
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<tbody>
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<td>3</td>
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<tr>
<td>Profit</td>
<td>15-5-3 = 7</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Customer</th>
<th>000001 - Kowalski</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>90062 – Candy</td>
</tr>
<tr>
<td>Distribution channel</td>
<td>02 - internet</td>
</tr>
<tr>
<td>Revenue</td>
<td>10</td>
</tr>
<tr>
<td>COGS</td>
<td>3</td>
</tr>
<tr>
<td>Overhead cost</td>
<td>1</td>
</tr>
<tr>
<td>Profit</td>
<td>10-3-1 = 6</td>
</tr>
</tbody>
</table>

Profit for customer Kowalski = 13
Profit for customer Kowalski buying on the internet = 6

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**Organizational structure**

- Operating concern is the basic structure in CO-PA
- More than one CO areas can be assigned to one operating concern
- CO-PA has to be activated in the CO Area – transaction KEKE

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**CO-PA - configuration**

Maintain operating concern – transaction KEA0 – choose characteristics and value fields you want to use

Some characteristics are fixed for each operating concern
CO-PA - Characteristics

SAP delivered characteristics are connected to the fields in other SAP areas. You can create user-defined characteristics which begin with WW.

CO-PA Value fields

SAP delivers some value fields that still have to be maintained to determine value flow. You can create user defined value fields which must begin with VV.

CO-PA Value flow

Assignment of FI accounts to value fields.
CO-PA Value flow
Assignment of FI accounts to value fields – PA transfer structure FI

Source – cost elements or cost element groups

Value field – a value field to which the posting will be made from source accounts
CO-PA Value flow
Assignment of SD invoice elements – price conditions to value fields

CO-PA Value flow
Assignment of SD invoice elements – price conditions to value fields

CO – PA Example and reports

<table>
<thead>
<tr>
<th>Customer</th>
<th>Product</th>
<th>Distribution channel</th>
<th>Revenue</th>
<th>COGS</th>
<th>Overhead cost</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>000001 - Kowalski</td>
<td>90067 – Chewing gum</td>
<td>01 - traditional</td>
<td>15</td>
<td>5</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>000001 - Kowalski</td>
<td>90652 – Candy</td>
<td>02 - internet</td>
<td>10</td>
<td>3</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

Profit for customer Kowalski = 13
Profit for customer Kowalski buying on the internet = 6