

Digital Enterprise Research Institute

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Business Information Systems  
Unit 3  
Business Management  
for Computer Science Students  
Dr. Martin Hepp

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## Logistics

- **Classes**
  - Oct 3: Unit 1
  - Oct 10: Unit 2
  - Oct 17: *needs to be rescheduled* (no classes)
  - Oct 24: *needs to be rescheduled* (no classes)
  - Oct 31: Unit 3 (13.00-15.00)
  - Nov 7: *needs to be rescheduled* (no classes)
  - Nov 14: Unit 4
  - Nov 21: Unit 5
  - Nov 28: Unit 6
  - Dec 5: Unit 7
  - Dec 12: *needs to be rescheduled* (no classes)
  - Dec 19: **Unit 8 + 9 (13.00-17.00 make-up#1 and #2)**
  - Jan 9: Unit 10
  - Jan 16: Unit 11
  - Jan 23: Unit 12
  - Jan 30: **Exam during class time (13.00-15.00)**
- **Classroom:** HS 11
- **Office Hours:**
  - By appointment only
  - please contact me by e-mail, martin.hepp@deri.org

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## Focus of Business Management

General Focus:

- How to manage an enterprise based on rational decisions?

Core Problems:

- Sourcing and Use of Scarce Resources
- Efficient Production
- Market Development and Diffusion
- Investment and Financing Decisions
- Planning, Decision Making, and Controlling
- Use and Development of Human Resources

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## A Very Much Simplified Model of An Enterprise

Core Questions:

Which products should be produced in which quantities?  
(radios or toasters, corn flakes or bread?)

Which resources should be used in which ratios?

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## Topics and Sub-Disciplines

- Accounting
- Decision Science
- Operations Management
- Finance
- Human Resources
- Marketing

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## Accounting

- **Financial Accounting**
  - Target Audience: Investors, State (Taxation),...
  - Purpose: Determine and monitor financial success of the enterprise
- **Cost Accounting**
  - Target Audience: Decision-makers inside the enterprise
  - Purpose: Determine and monitor efficient use of resources (e.g. labor costs for a project vs. earnings from this project)

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## Accounting: Balance Sheet

- Purpose: Snapshot of the financial state of an enterprise
- Compares all assets vs. all liabilities
- Allows to quickly grasp the „health“ of an enterprise in financial terms
- Assets and liabilities are divided into short- and long-term obligations (checking, money market, ...)

Assets	Liabilities
(All Assets)	(All Liabilities)

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## Accounting: Balance Sheet

Assets	Liabilities
Current assets <ul style="list-style-type: none"> <li>• Cash</li> <li>• Accounts receivables</li> </ul> Fixed assets <ul style="list-style-type: none"> <li>• Land</li> <li>• Buildings</li> <li>• Office equipment</li> <li>• Machinery</li> <li>• Vehicles</li> </ul>	Accounts payable Accrued payroll and withholding Long-term liabilities <b>Owners equity</b>
<b>Total Assets</b>	<b>Total Liabilities</b>

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## Accounting: Profit and Loss Account

Expense	Revenues
Goods Purchase, Freights,... Wages Interest paid Depreciation <b>Net Income / Loss</b>	Sales Other income
<b>Total Expenses</b>	<b>Total Total Revenues</b>

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## Accounting: Depreciation

- Lasting assets loose value over time.
- This must be properly reflected in accounting.
- Example: Purchase of a machine in 2005 – the money is spent, but the machine exists as a substitute asset.
- Goal: Estimate the loss of value over the lifespan of a lasting asset.

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## Accounting: Depreciation: Standard Methods

- Linear
  - Depreciation per year: (purchasing price – remaining value at end of usage) / duration of usage
- By output / usage
  - e.g. per kilometer driven, tons anodized, ...
- By a fixed percentage of the remaining value
  - e.g. 30 % of the purchasing price for the first year, 30 % of (purchasing price – 30 %) for the second year, ...

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## Decision Making: Certainty vs. Uncertainty

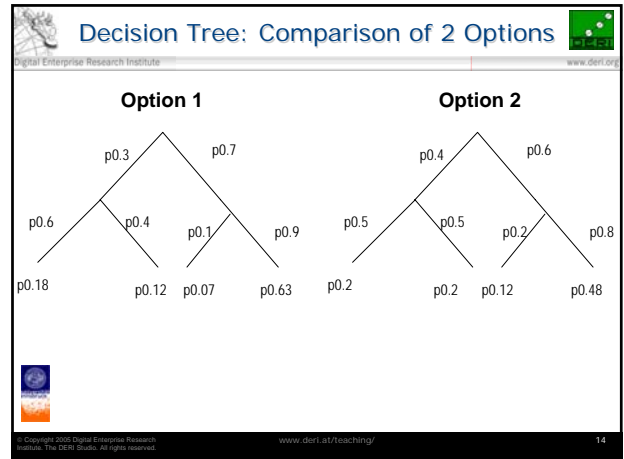
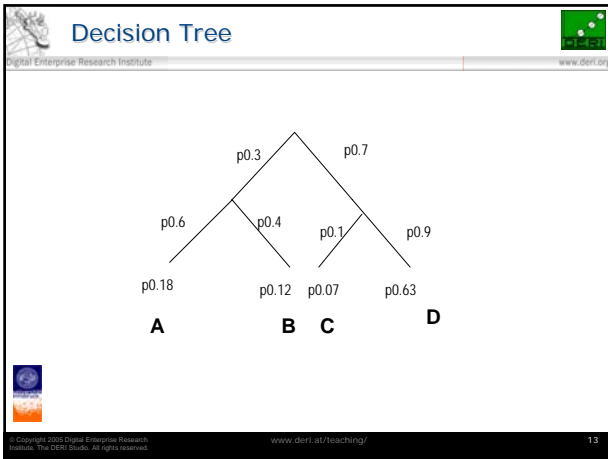
Decision Making under certainty is simple, because we can compute the financial result in advance:

Example:

- Option 1: We produce 10 units of Corn Flakes, which causes costs of 1 EUR per unit, and will sell all of them or 3 EUR per package
- Option 2: We produce 20 units of Corn Flakes, which reduces the costs to 0,5 EUR per unit and will be able to sell 15 of them at 2 EUR per package

However, in most cases we do not know the actual outcome.  
Standard technique: Working with estimated probabilities

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- ### Finance
- Investment Decisions
  - Comparing alternative ways of raising capital (e.g. a loan from a bank vs. issuing stocks)
  - Take into account that financial resources cost/earn interest.
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### Finance: Standard Methods

- Net Present Value

$$NPV = \sum_{t=1}^T \frac{C_t}{(1+r)^t} - C_0$$

- C(0) – Cash flow at the beginning, C(t) Cash flow at the end of period t, r = Interest rate
- Example

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- ### Human Resources
- Core topics:
  - Managing Human Resources
    - Recruiting
    - Career Management
    - Contracts, Salaries, Monitoring
    - Legal constraints of human labor as a factor of production
  - Incentives and Agency Conflicts
    - Only part of an agent's behavior is observable
    - Agents are assumed to be guided by own interests
    - Example: Fix salary vs. commissions
    - Efficient contracts make sure that the incentives of employer and employee match
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- ### Marketing
- In the early industrial age, enterprises produced what they could technically produce.
  - Marketing was a revolutionary approach of putting market demand and preference structures in the center of interest.
  - *"Marketing is the process of planning and executing the pricing, promotion, and distribution of goods, ideas, and services to create exchanges that satisfy individual and organizational goals."* American Marketing Association.
- Core Topics:
- Product Design based on consumer preferences
  - Pricing (price elasticity)
  - Market Segmentation (e.g. professional vs. consumer products)
  - Promotion / Advertisement
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Operations Management

- Inventory Level, Procurement
- Replenishment (e.g. KANBAN)
- Production planning (sequence, scheduling,...)
- Quality control

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Thank you!

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