Selected tools of Strategic Management Accounting

Guest lecture at the

Ural State University of Railway Transport
Yekaterinburg
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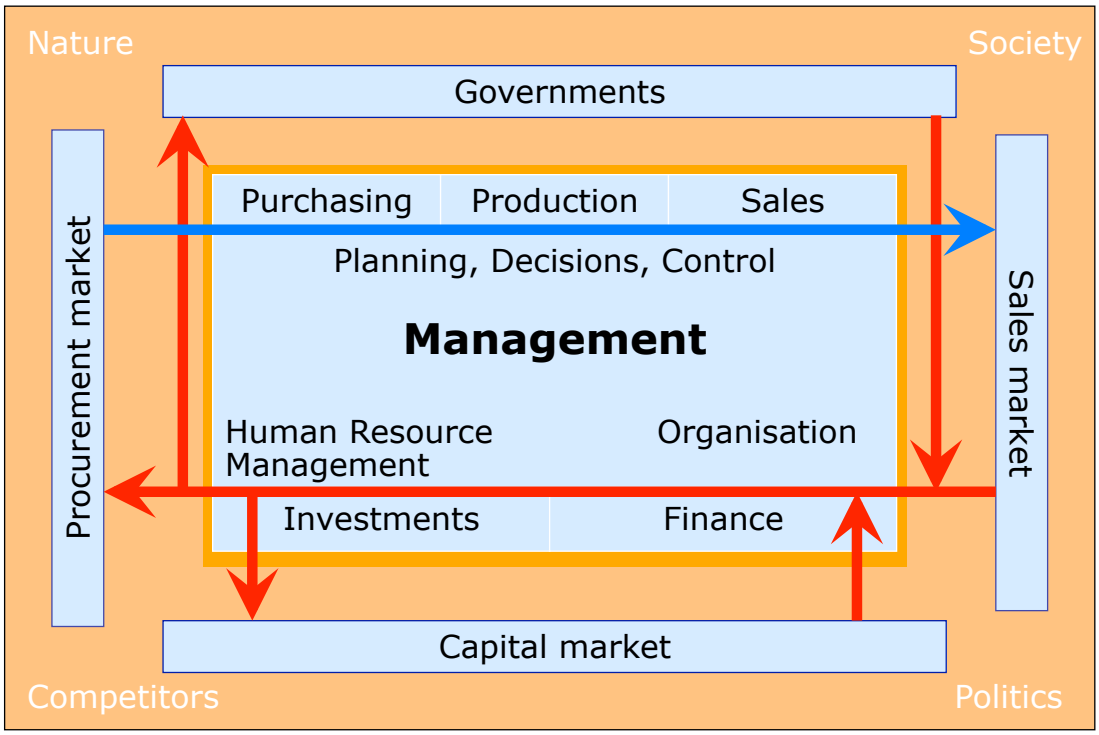
Technical University of Applied Sciences Wildau

1 Fundamentals of Managerial Accounting



1 Fundamentals of Managerial Accounting

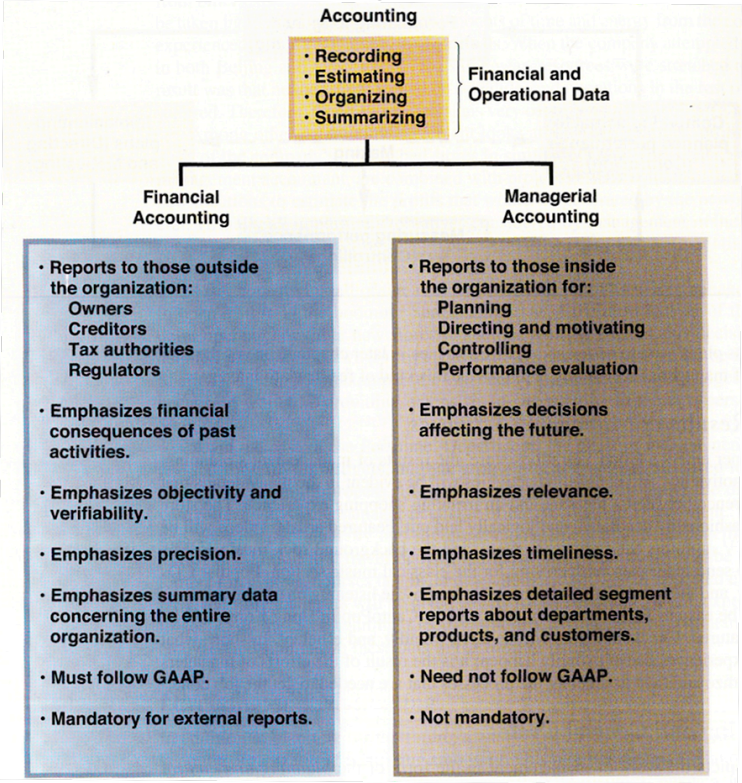
⇨ Need for information for important participants of a company

	need information to ...
Management	... direct and control the flows of goods and money according to the goals of the shareholder and the stakeholder
Shareholders	... evaluate the company as an alternative for investments based on information about the dividends and the company value
Banks	... estimate the risks of credits. A bank also needs also information for investment strategies
Governments and tax authorities	... define the basis for tax payments and other fees

Different requirements for information call for different accounting systems.

Accounting:
An information system that is concerned with providing complete information about a company's business operations.

1 Fundamentals of Managerial Accounting



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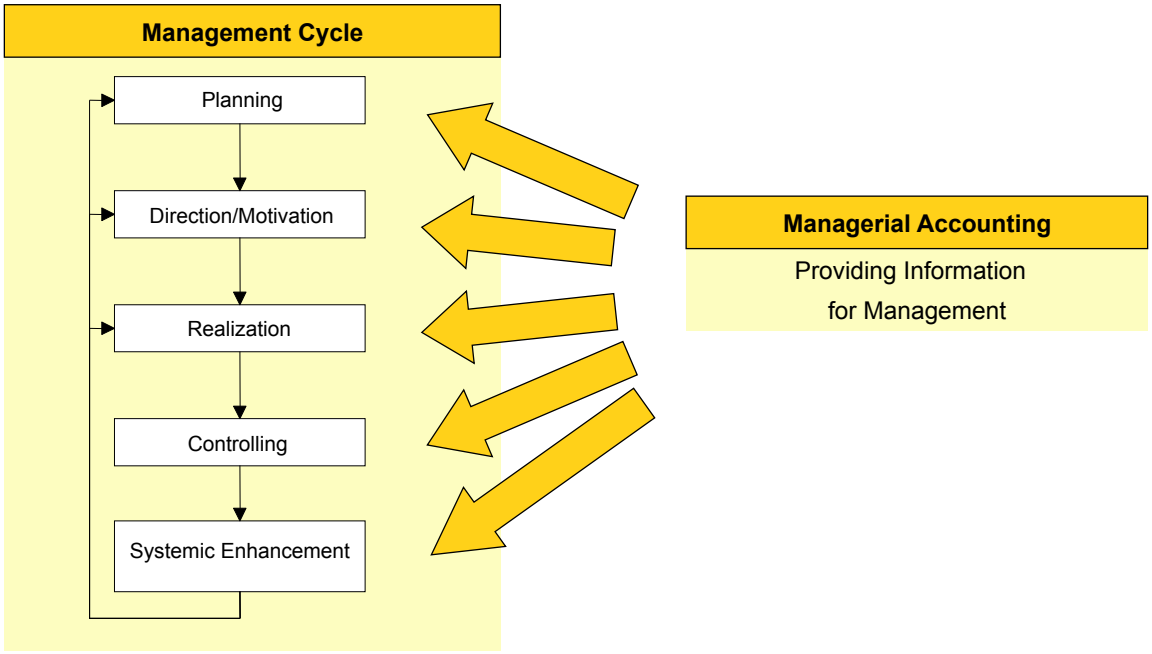


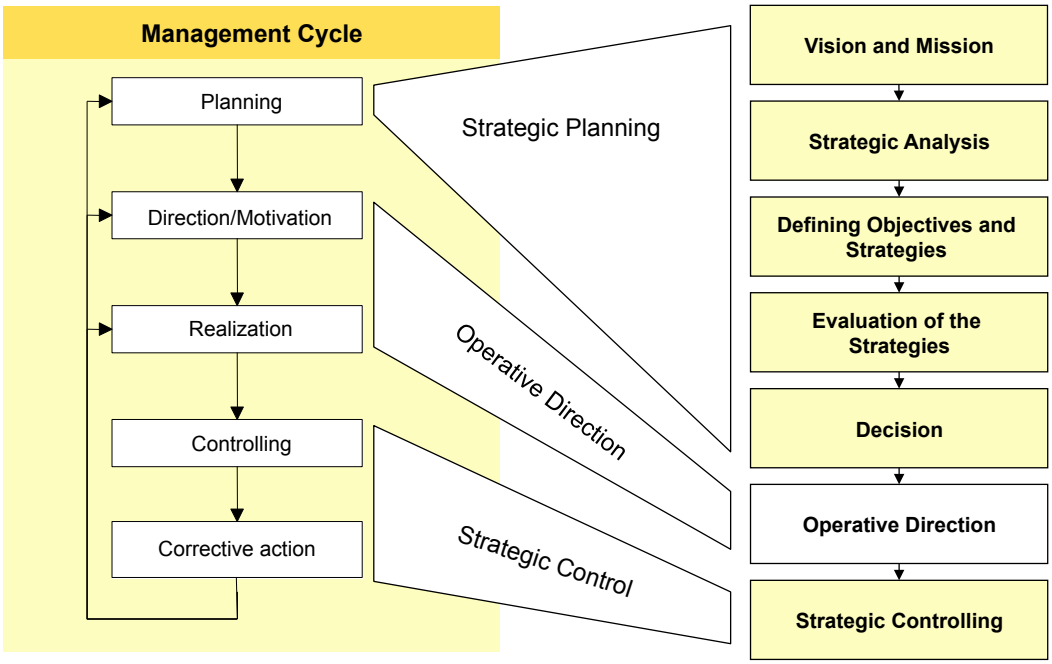
2 Fundamentals of Strategic Managerial Accounting

⇨ **Management Accounting …**

- is intended to provide information about a company's business operations to managers within a company, to support them in their management tasks,
- includes specific planning, controlling, coordinating and consulting activities.

Criteria	Strategy Operations
planning horizon	decreasing →
quantification of the figures	increasing →
hierarchy level	decreasing →
creativity requirements	increasing →
level of detail	increasing →
alteration speed	increasing →

2 Fundamentals of Strategic Managerial Accounting



3 Selected tools of Strategic Management Accounting

⇨ **The MRO company** (fictitious company)

- Subsidiary of a flight engine OEM.
- Core competencies:
  - Maintenance, Repair and Overhaul (MRO) of civil flight engines
  - Component Repair
  - Mobile repair teams

⇨ **Strategic project**

- Business expansion through a new MRO line for the BE23 family by FD Aircraft Engines

3 Selected tools of Strategic Management Accounting

Airline

Maintenance - Repair & Overhaul of Flight Engines

Payments e.g. hourly rate

MRO shop

3 Selected tools of Strategic Management Accounting

- **Vision and Mission**
- Strategic Analysis
- Defining Objectives and Strategies
- Evaluation of the Strategies
- Decision
- Operative Direction
- Strategic Controlling

- Vision and Mission
- Principles
- Corporate philosophy
- to be formulated by the top-level management and/or the shareholders

The MRO company is the world's largest independent services provider for the maintenance of commercial flight engines.

The MRO company cooperates with all of the big players in the industry worldwide, having made a name for itself as a must-have partner.

3 Selected tools of Strategic Management Accounting

- Vision and Mission
- **Strategic Analysis**
- Defining Objectives and Strategies
- Evaluation of the Strategies
- Decision
- Operative Direction
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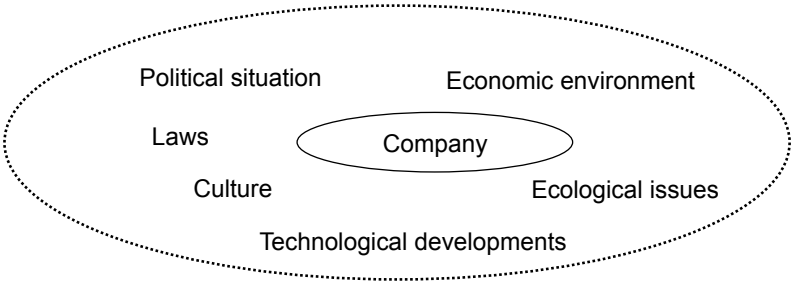
Opportunities and Risks



Strengths and Weaknesses

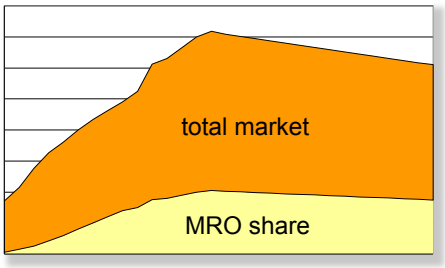
- Functional analysis
  - compared to competitors
  - compared to other subsidiaries
  - time comparison
- Value chain analysis
- Values and attitude of management

3 Selected tools of Strategic Management Accounting

- Vision and Mission
- **Strategic Analysis**
- Defining Objectives and Strategies
- Evaluation of the Strategies
- Decision
- Operative Direction
- Strategic Controlling

Opportunities and Risks

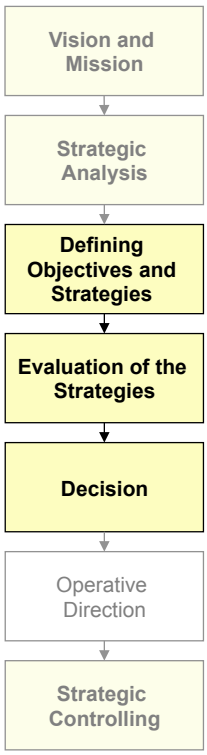
- Air traffic law requirements
- Latest trends in aviation engineering
- Exchange rate, Inflation, Subsidies
- Market analysis



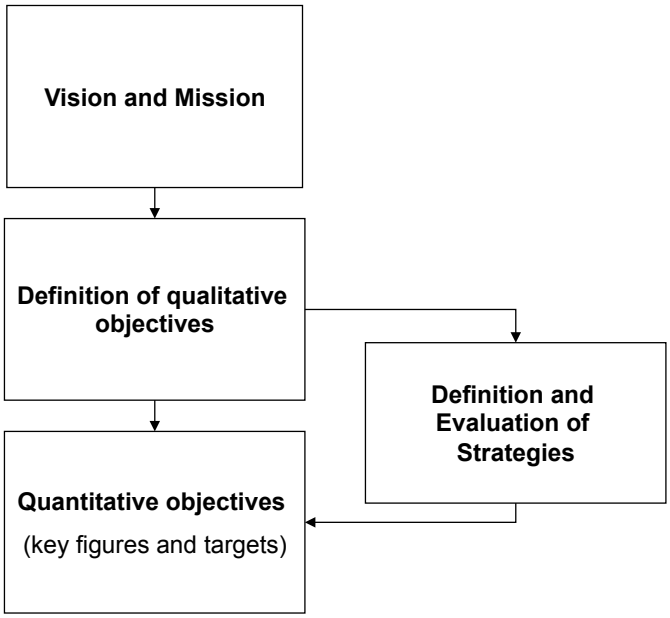
Strenghts and Weaknesses

- Repair capabilities
- Economies of Scale with existing programs
- Qualification of the engineers and workers

3 Selected tools of Strategic Management Accounting



Defining Objectives and Strategies



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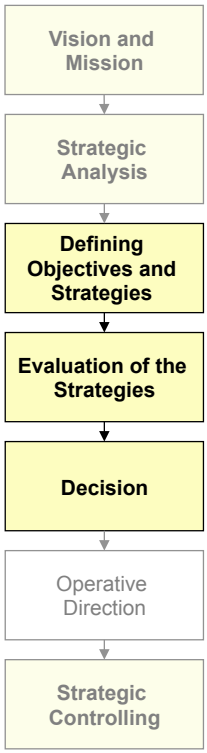
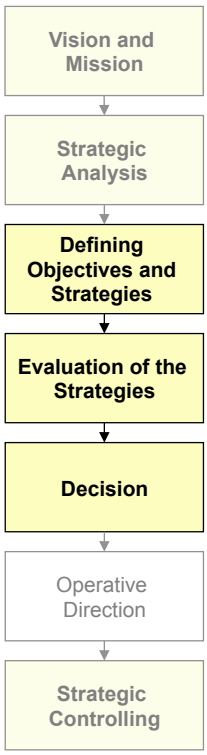


Selected tools

- Portfolio Analysis
- Investment appraisal / Capital budgeting (Net Present Value, IRR, ...)
- Shareholder Value
- Economic Value Added
- Cash Flow Return On Investment
- Experience Theory
- Value Chain Analysis
- Activity Based Costing
- Target Costing
- Life Cycle Costing
- Balanced Scorecard

3 Selected tools of Strategic Management Accounting



Definition of qualitative objectives

- The MRO expands its position as the largest independent maintenance service provider by 20XX.

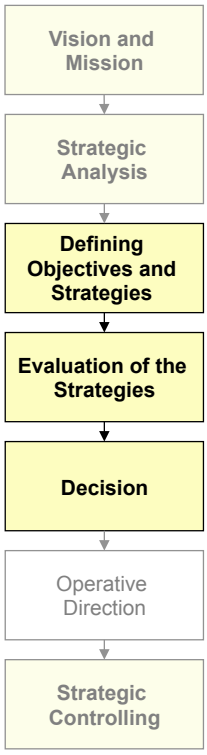
Strategy

- Expansion of the product portfolio through a new MRO line for the BE23 family by FD Aircraft Engines
- Cost leadership strategy

Definition and Evaluation of Strategies

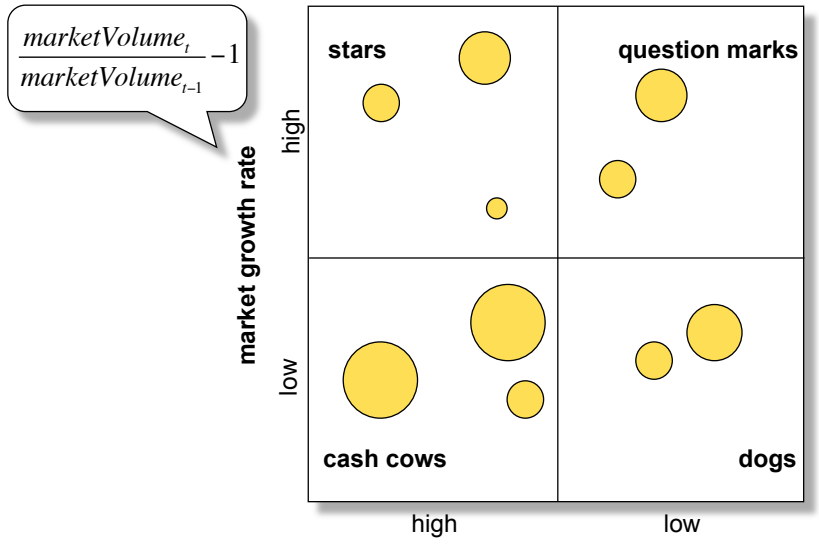
- Growth-share matrix (Boston Consulting Group analysis)
- Net Present Value (NPV)
- Discounted Cash Flows

3 Selected tools of Strategic Management Accounting



Growth-share matrix (Boston Consulting Group analysis)

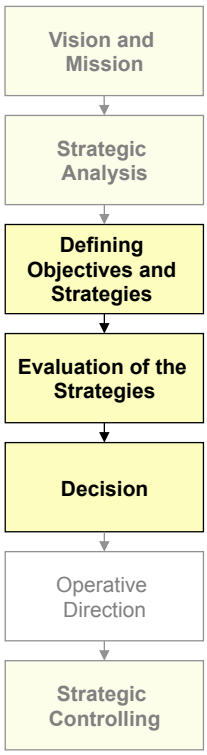
$$\frac{marketVolume_t}{marketVolume_{t-1}} - 1$$

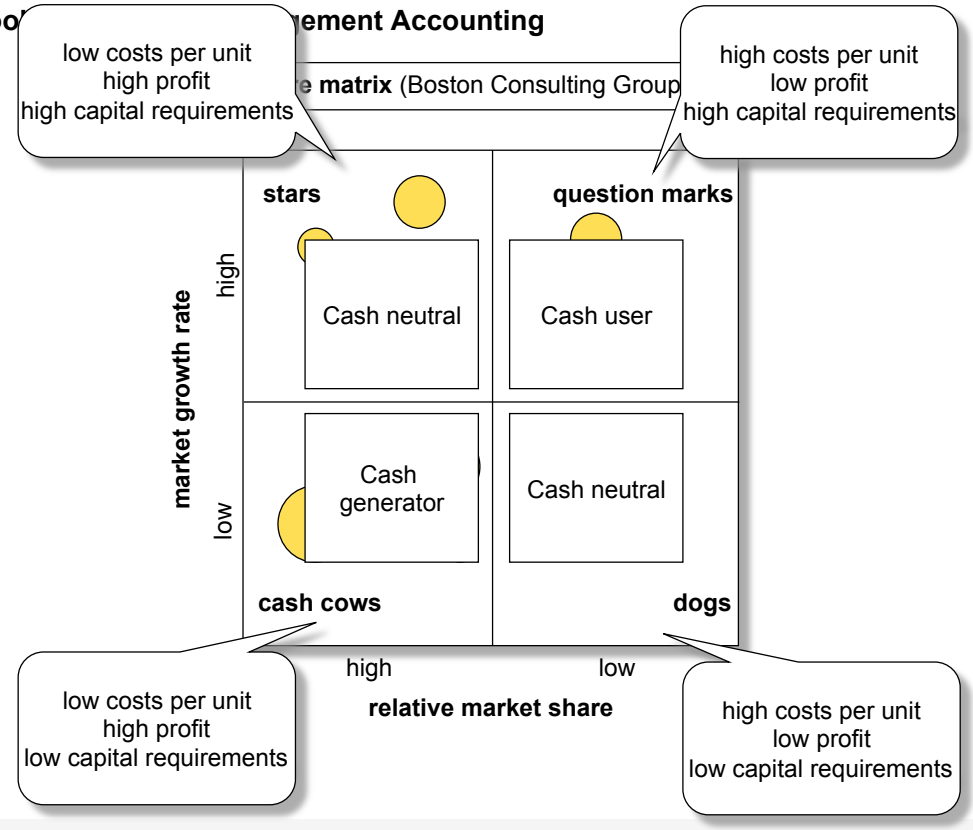


$$\frac{sales\ of\ company's\ product}{sales\ of\ the\ largest\ competitor}$$

 [cf. David (2013), p. 212ff; Lynch (2012), p. 361ff.]

3 Selected too…gement Accounting





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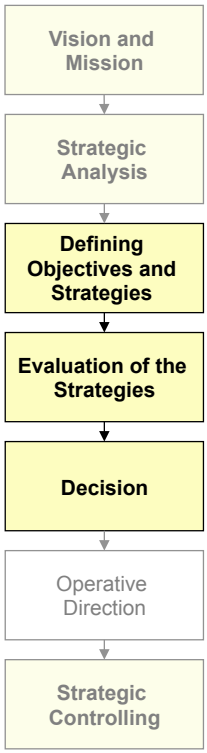

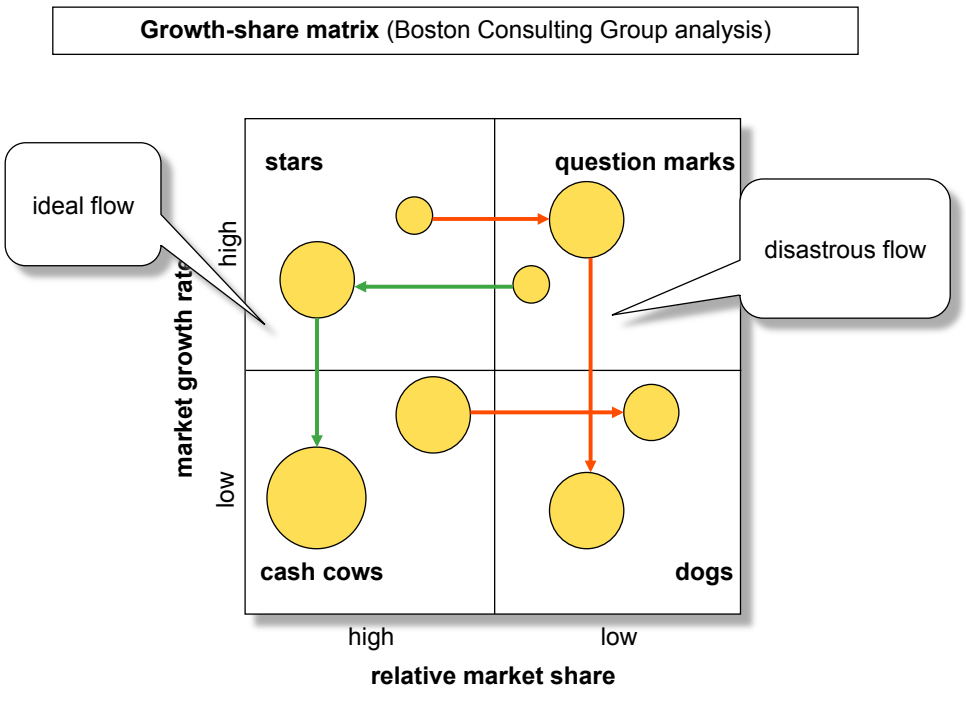

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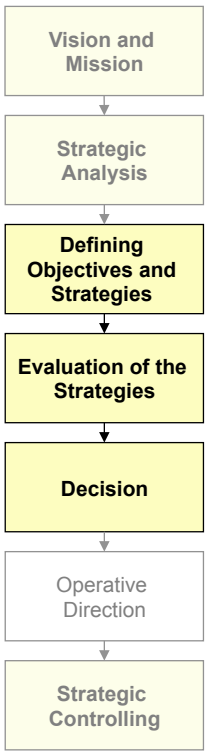
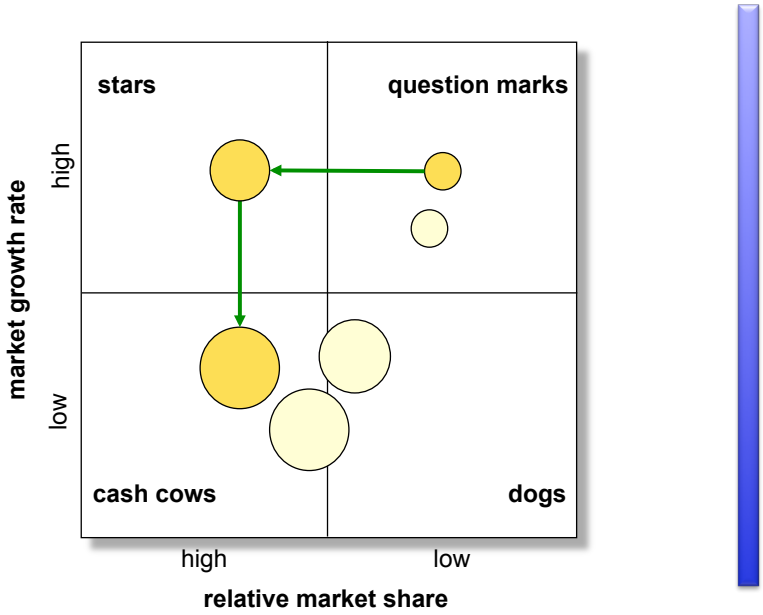


Growth-share matrix for the MRO company



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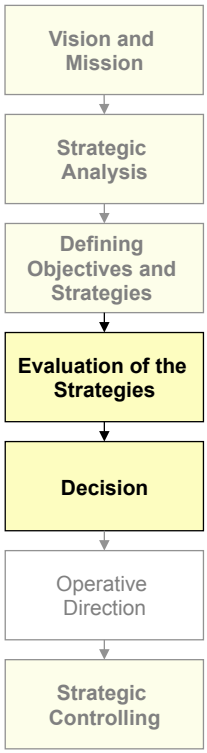


Net Present Value (NPV) – Discounted Cash Flow Approach

$$NPV = \sum_{t=0}^{T} FCF_t \cdot q^{-t} \quad ; \quad q = (1+i)$$

FCF_t - Free Cash Flow in period t

i - interest rate (WACC - Weighted Average Cost of Capital)

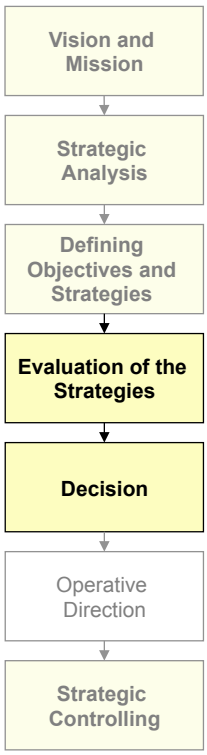
NPV rules:

NPV > 0 ➔ Internal Rate of Return (IRR) > WACC ➔**invest**

NPV = 0 ➔ IRR = WACC ➔ indifference between investment and alternative investments

NPV < 0 ➔ IRR < WACC ➔ **don't invest**

3 Selected tools of Strategic Management Accounting



Free Cash Flow

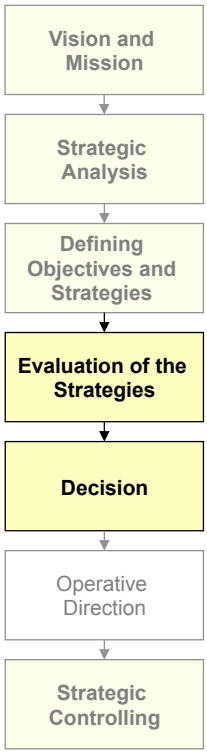
- **Free cash flow** is the cash flow generated by the firm's assets. It is a measure of the cash flow available to those who finance the firm's activities.

[Hawawini/Viallet (2011), p. 121.]

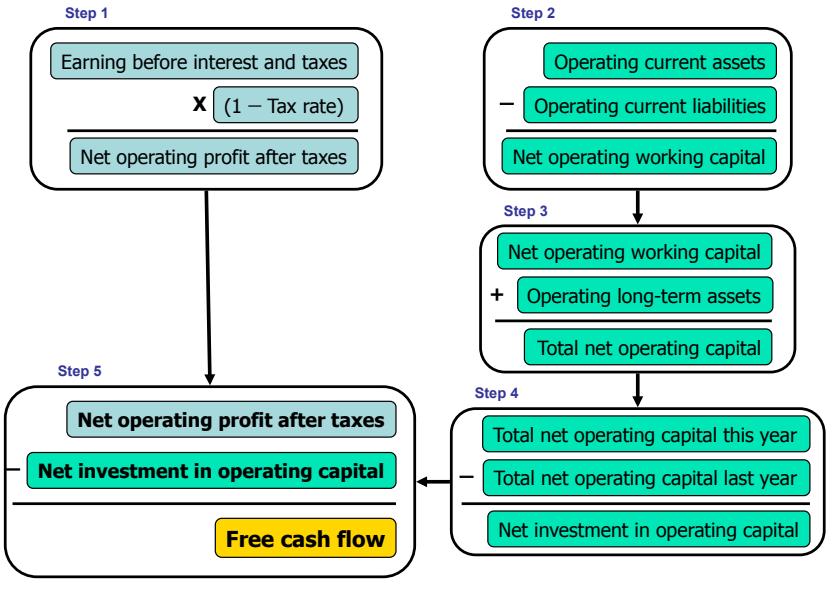
- **Free cash flow** (FCF) is the amount of cash available from operations for distribution to all investors (including stockholders and debt holders) after making the necessary investments to support operations.
- Used for:
  1. Pay interest on debt.
  2. Pay back principal on debt.
  3. Pay dividends.
  4. Buy back stock.
  5. Buy non-operating assets (e.g., marketable securities, investments in other companies, etc.)

[Erhardt/Brigham (2011), p. 64ff.]

3 Selected tools of Strategic Management Accounting



Free Cash Flow



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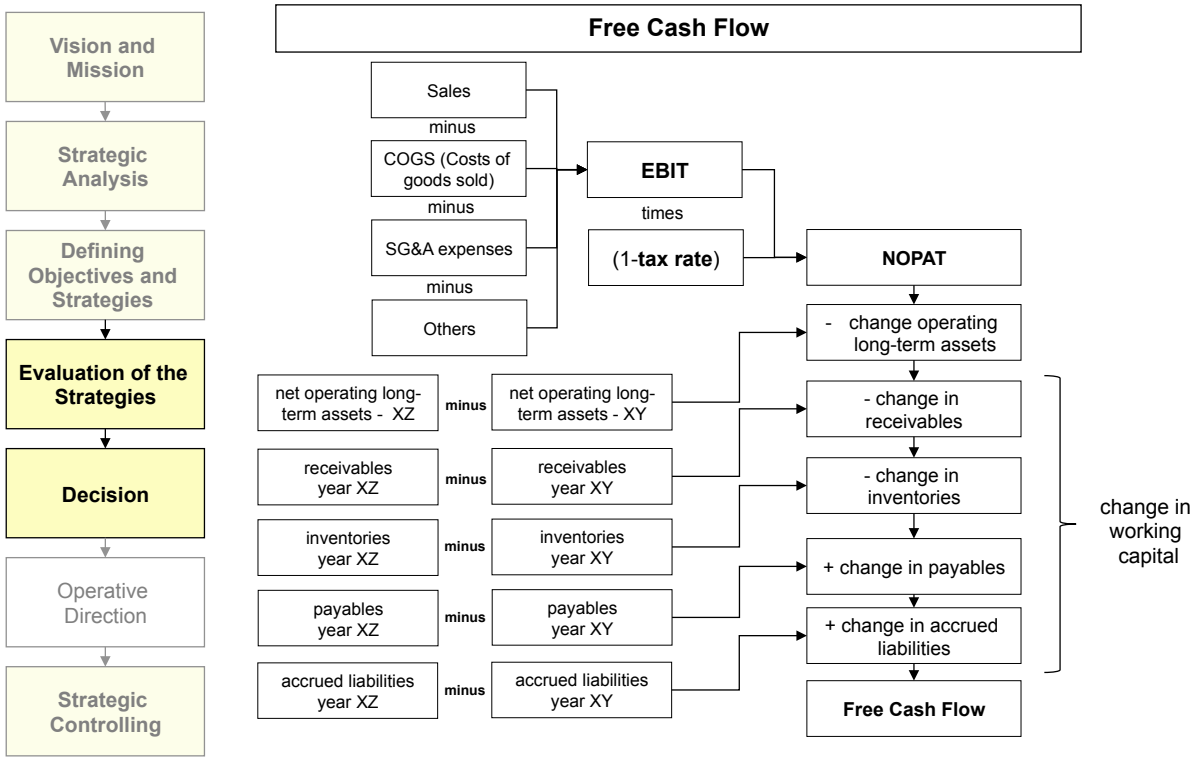

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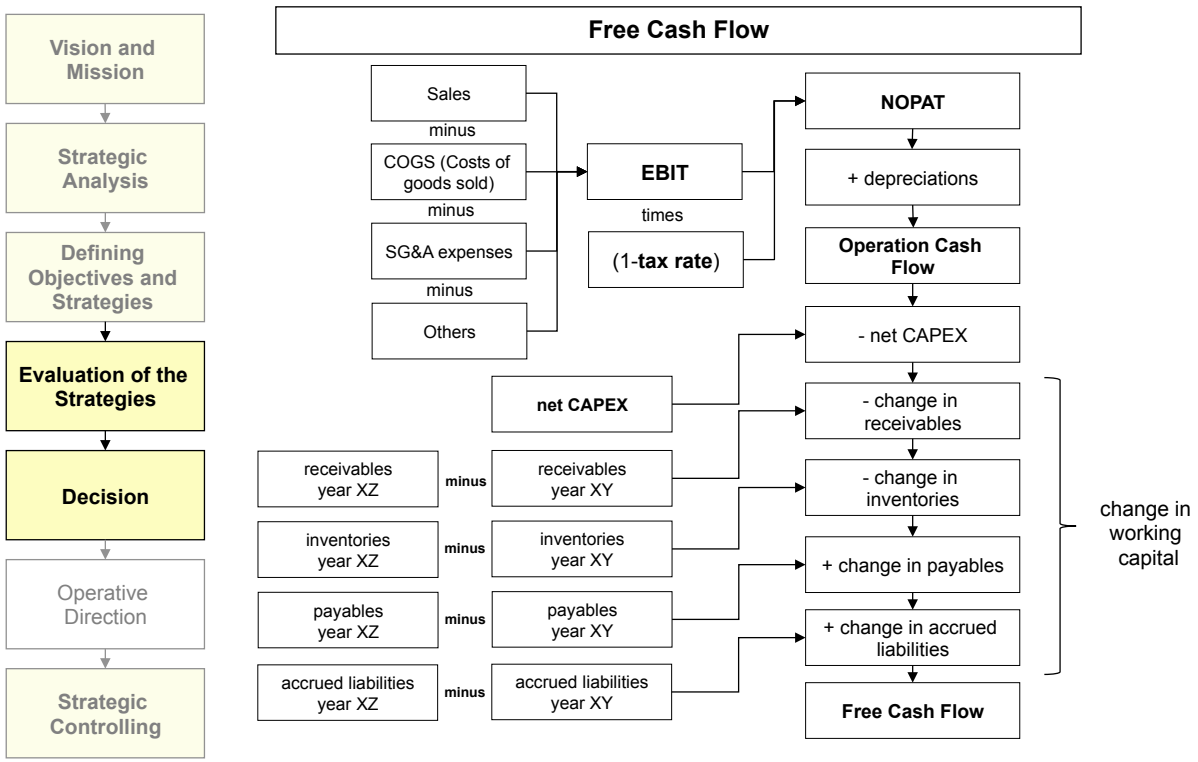

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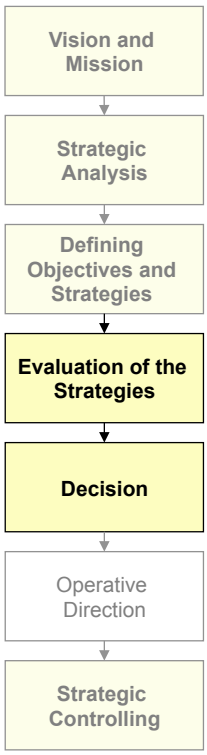
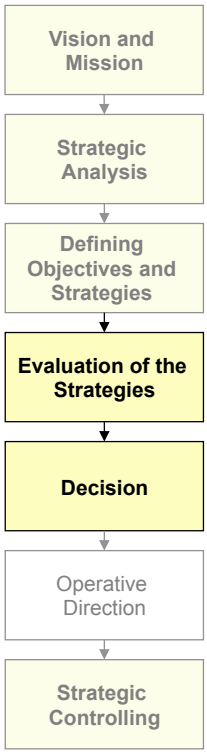


Net Present Value (NPV) – Discounted Free Cash Flows

		Plan			
		0	1	2	3
Units sold	[units]		12	24	36
Selling price per unit	[€'000/units]		1,000	1,000	1,000
Direct costs per unit	[€'000/unit]		700	700	700
Manufacturing Overheads	[€'000]		1,260	2,520	3,780
Sales	[€'000]		12,000	24,000	36,000
- COGS	[€'000]		-9,660	-19,320	-28,980
- SG&A expenses	[€'000]		-600	-1,200	-1,800
- Accrued unpaid expenses	[€'000]		-120	-240	-360
- Depreciations	[€'000]		-1,000	-1,000	-1,000
EBIT	**[€'000]**		**620**	**2,240**	**3,860**
tax rate	[%]		40%	40%	40%
NOPAT	**[€'000]**		**372**	**1,344**	**2,316**

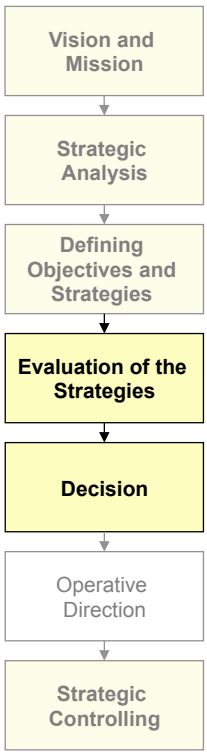
3 Selected tools of Strategic Management Accounting



Net Present Value (NPV) – Discounted Free Cash Flows

		Plan			
		0	1	2	3
Operating long-term assets	[€'000]	3,000	2,000	1,000	0
Receivables	[€'000]	0	1,000	2,000	3,000
Inventories	[€'000]	0	1,512	6,048	13,608
Payables	[€'000]	0	1,587	6,198	13,833
Accrued liabliities	[€'000]	0	120	240	360
Total	[€'000]	3,000	2,925	2,850	2,775

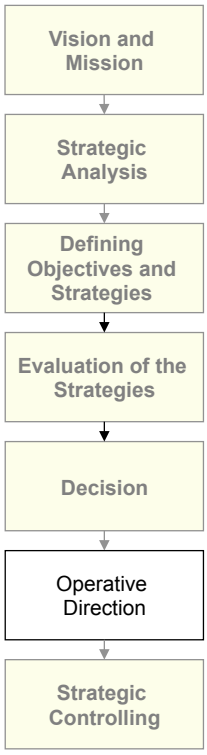
3 Selected tools of Strategic Management Accounting



Net Present Value (NPV) – Discounted Free Cash Flows

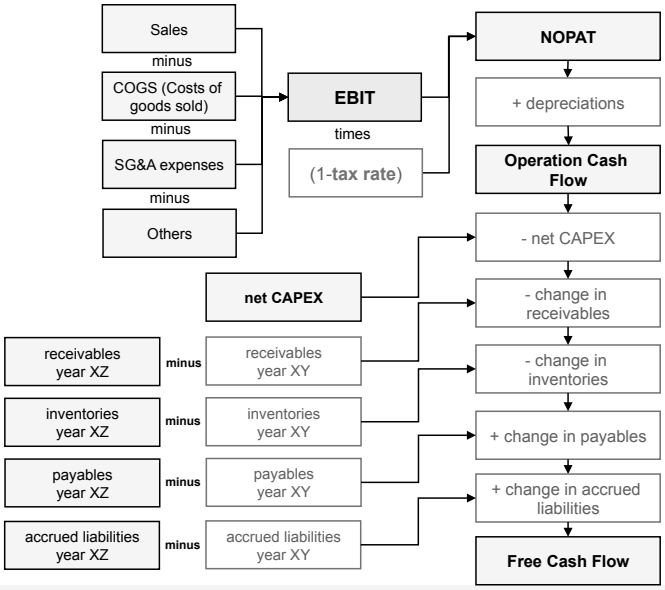
		Plan			
		0	1	2	3
NOPAT	[€'000]	0	372	1,344	2,316
+ Depreciations	[€'000]	0	1,000	1,000	1,000
Operating Cash Flow	[€'000]	0	1,372	2,344	3,316
- CAPEX	[€'000]	-3,000	0	0	0
Change in					
- Receivables	[€'000]	0	-1,000	-1,000	-1,000
- Inventories	[€'000]	0	-1,512	-4,536	-7,560
+ Payables	[€'000]	0	1,587	4,611	7,635
+ Accrued liabilities	[€'000]	0	120	120	120
Free Cash Flow	[€'000]	-3,000	567	1,539	2,511
DFCF (i=10%)	[€'000]	-3,000	515	1,272	1,887
NPV	[€'000]	674			

3 Selected tools of Strategic Management Accounting



Operative Direction

⇨ The key figures of the business case can be used as targets for the operational management and can be controlled and monitored through a Balanced Scorecard.



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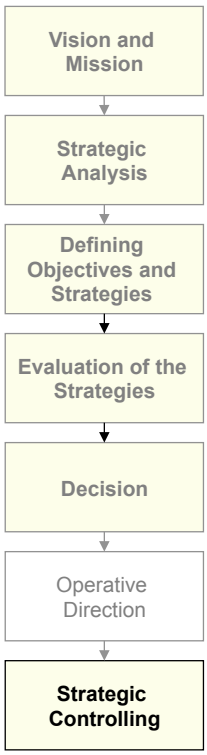
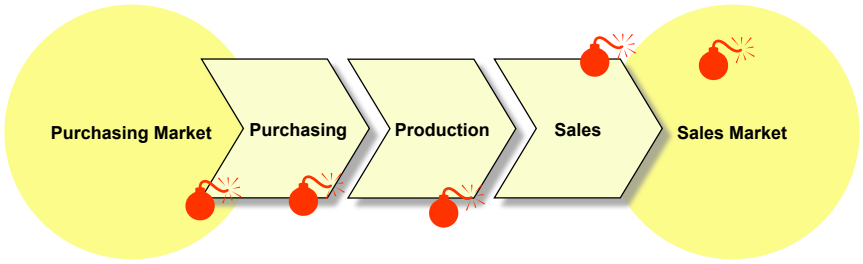


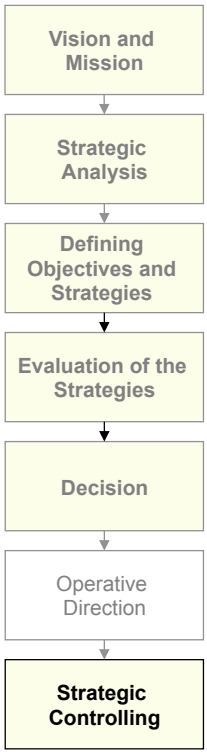
Strategic Controlling



⇨ **Aim of Strategic Controlling:**
Detect and avoid disturbances and other bad influences on the company's strategic processes

- Checking the assumptions
- Analysis of the progress of the project
- Variance analysis of the planned key figures and the realized (and expected) values of the key figures

3 Selected tools of Strategic Management Accounting



Strategic Controlling

Corrective information

1 **Cause** of a NPV variance

2 Was (is) the cause of a NPV variance **avoidable**?

3 **Responsibility**

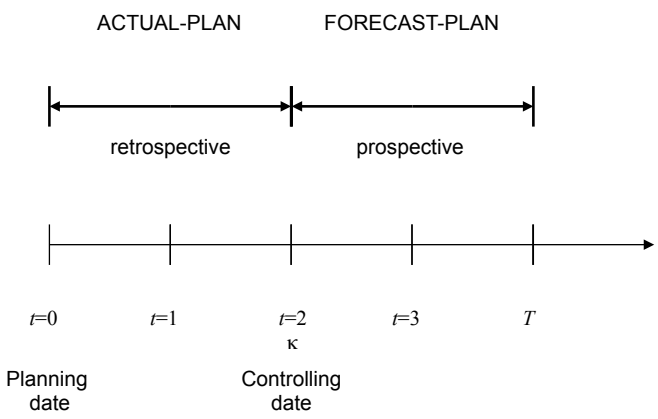
4 **Impact** on profit or other key figures

5 Opportunities for **corrective actions**

3 Selected tools of Strategic Management Accounting

Vision and Mission
Strategic Analysis
Defining Objectives and Strategies
Evaluation of the Strategies
Decision
Operative Direction
Strategic Controlling

NPV Variance Analysis



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NPV Variance Analysis

$$\Delta^{ap} NPV = \sum_{t=0}^{T} FCF_t^a \cdot q^{a^{-t}} - \sum_{t=0}^{T} FCF_t^p \cdot q^{p^{-t}}$$

$$a = \begin{cases} a & \text{für} \quad 0 \le t \le \kappa \\ f & \text{für} \quad \kappa < t \le T \end{cases}$$

Δ - Variance operator
κ - Controlling date

a - Actual value
f - forecasted value
p - planned value

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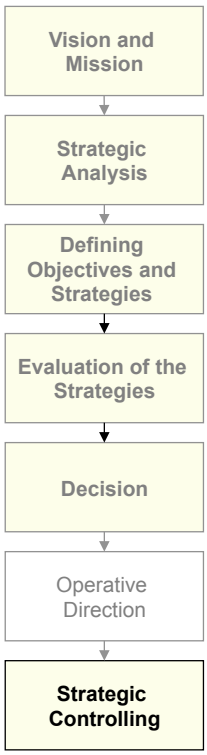

NPV Variance Analysis

		Plan			
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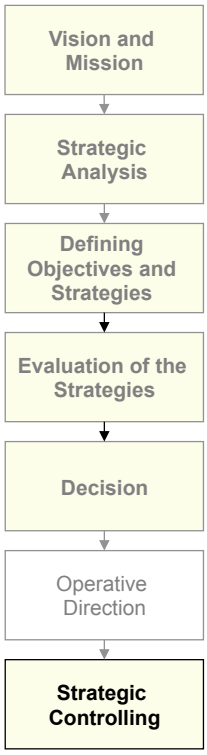
Free Cash Flow	[€'000]	-3,000	567	1,539	2,511
DFCF (i=10%)	[€'000]	-3,000	515	1,272	1,887
NPV	[€'000]	674			

		Actuals			Forecast
		0	1	2	3
NOPAT	[€'000]	0	1,014	3,075	3,762
+ Depreciations	[€'000]	0	600	600	600
Operating Cash Flow	[€'000]	0	1,614	3,675	4,362
- CAPEX	[€'000]	-1,800	0	0	0
Change in					
- Receivables	[€'000]	0	-1,375	-2,063	-688
- Inventories	[€'000]	0	-1,400	-7,350	-3,850
+ Payables	[€'000]	0	1,119	5,616	2,922
+ Accrued liabilities	[€'000]	0	110	165	55
Free Cash Flow	[€'000]	-1,800	68	43	2,801
DFCF (i=15%)	[€'000]	-1,800	59	33	1,842
NPV	[€'000]	133			

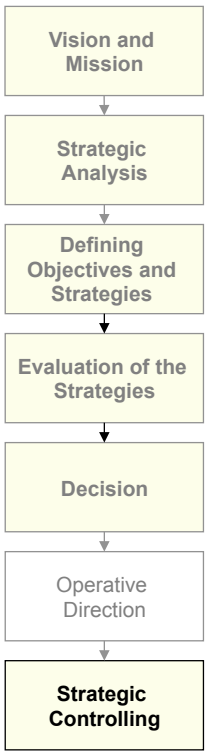
3 Selected tools of Strategic Management Accounting



NPV Variance Analysis

			Years			
			0	1	2	3
a	DFCF	[€'000]	-1,800	59	33	1,842
	NPV	**[€'000]**	**133**			
p	DFCF	[€'000]	-3,000	515	1,272	1,887
	NPV	**[€'000]**	**674**			
Δ^{ap}	DFCF variances	[€'000]	1,200	-457	-1,239	-45
	NPV variance	**[€'000]**	**-540**			

3 Selected tools of Strategic Management Accounting



NPV Variance Analysis

$$\Delta^{ap}NPV = \sum_{t=0}^{T} FCF_t^a \cdot q^{a^{-t}} - \sum_{t=0}^{T} FCF_t^p \cdot q^{p^{-t}}$$

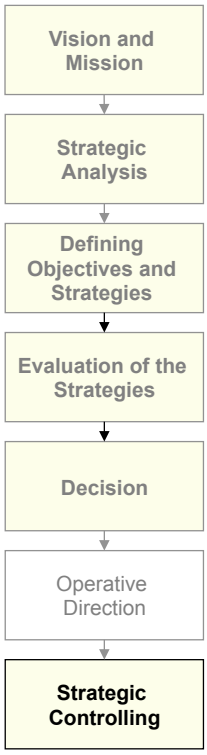
NPV variance breakdown

$$\Delta^{ap}NPV = \sum_{t=0}^{T} \Delta^{ap}FCF_t \cdot q^{q^{-t}}$$ Free Cash Flow variances

$$+\sum_{t=0}^{T} FCF_t^a \cdot \Delta^{ap}q^{-t}$$ Interest rate variances

$$-\sum_{t=0}^{T} \Delta^{ap}FCF_t \cdot \Delta^{ap}q^{-t}$$ Higher order variances

3 Selected tools of Strategic Management Accounting



NPV Variance Analysis

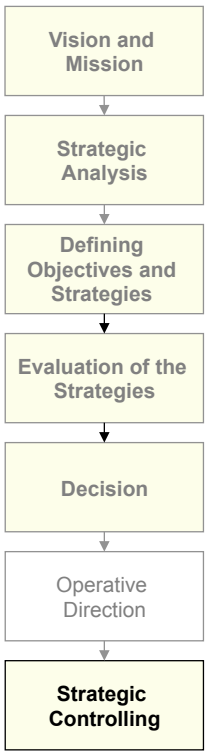
(68 - 567) * 1.15^{-1}

			Years 0	1	2	3	Total
	Free Cash Flow variances	[€'000]	1,200	-434	-1,131	191	-174
+	Interest rate variances	[€'000]	0	-3	-3	-263	-268
-	Higher order variances	[€'000]	0	-20	-105	27	-98
=	DCFC variances	[€'000]	1,200	-457	-1,239	-45	-540
	NPV variance	**[€'000]**	**-540**				

68 * (1.15^{-1} - 1.10^{-1})

(68 - 567) * (1.15^{-1} - 1.10^{-1})

3 Selected tools of Strategic Management Accounting

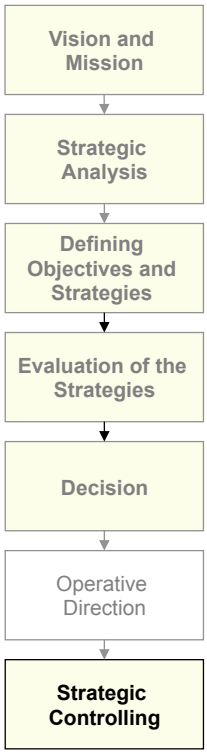


NPV Variance Analysis

$FCF_t = OCF_t$	Operating Cash Flow
$-CE_t$	- CAPEX
$-\left(R_t - R_{t-1}\right)$	- Change in receivables
$-\left(I_t - I_{t-1}\right)$	- Change in inventories
$+\left(P_t - P_{t-1}\right)$	+ Change in payables
$+\left(A_t - A_{t-1}\right)$	+ Change in accrued liabilities

$\Delta^{ap} FCF_t \cdot q^{a^{-t}} = \Delta^{ap} OCF_t \cdot q^{a^{-t}}$	Operating Cash Flow variances
$-\Delta^{ap} CE_t \cdot q^{r^{-t}}$	CAPEX variances
$-\Delta^{ap}\left(R_t - R_{t-1}\right)\cdot q^{a^{-t}}$	Receivables variances
$-\Delta^{ap}\left(I_t - I_{t-1}\right)\cdot q^{a^{-t}}$	Inventories variances
$+\Delta^{ap}\left(P_t - P_{t-1}\right)\cdot q^{a^{-t}}$	Payables variances
$+\Delta^{ap}\left(A_t - A_{t-1}\right)\cdot q^{a^{-t}}$	Accrued liabilities variances

3 Selected tools of Strategic Management Accounting



NPV Variance Analysis

		Plan	
		0	1
NOPAT	[€'000]	0	372
+ Depreciations	[€'000]	0	1,000
Operating Cash Flow	[€'000]	0	1,372
- CAPEX	[€'000]	-3,000	0
Change in			
- Receivables	[€'000]	0	-1,000
- Inventories	[€'000]	0	-1,512
+ Payables	[€'000]	0	1,587
+ Accrued liabilities	[€'000]	0	120
Free Cash Flow	[€'000]	-3,000	567
DFCF (i=10%)	[€'000]	-3,000	515
NPV	[€'000]	674	

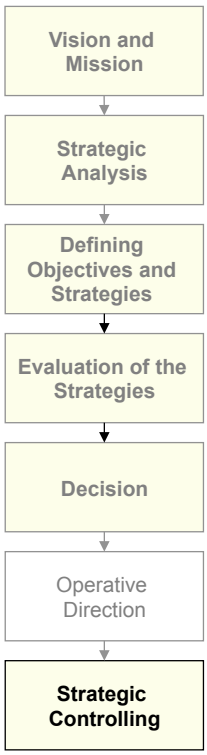
		Actuals	
		0	1
NOPAT	[€'000]	0	1,014
+ Depreciations	[€'000]	0	600
Operating Cash Flow	[€'000]	0	1,614
- CAPEX	[€'000]	-1,800	0
Change in			
- Receivables	[€'000]	0	-1,375
- Inventories	[€'000]	0	-1,400
+ Payables	[€'000]	0	1,119
+ Accrued liabilities	[€'000]	0	110
Free Cash Flow	[€'000]	-1,800	68
DFCF (i=15%)	[€'000]	-1,800	59
NPV	[€'000]	133	

(1,614 - 1,372) * 1.15^{-1}

			Years	
			0	1
	Operating Cash Flow variances	[€'000]	0	210
-	Capex variances	[€'000]	1.200	0
-	Receivables variances	[€'000]	0	-326
-	Inventories variances	[€'000]	0	97
+	Payables variances	[€'000]	0	-407
+	Accrued liabilities variances	[€'000]	0	-9
=	**Cash Flow variances**	**[€'000]**	**1.200**	**-434**

-(1,375 – 1,000) * 1.15^{-1}

3 Selected tools of Strategic Management Accounting



NPV Variance Analysis

			Years 0	1	2	3	Total
	Operating Cash Flow variances	[€'000]	0	210	1,006	688	1,905
-	Capex variances	[€'000]	1,200	0	0	0	1,200
-	Receivables variances	[€'000]	0	-326	-803	205	-924
-	Inventories variances	[€'000]	0	97	-2,128	2,439	409
+	Payables variances	[€'000]	0	-407	760	-3,099	-2,746
+	Accrued liabilities variances	[€'000]	0	-9	34	-43	-17
=	**Cash Flow variances**	**[€'000]**	**1,200**	**-434**	**-1,131**	**191**	**-174**

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Thank you for your attention.

If you have any questions, please feel free to ask.

Спасибо за ваше внимание