



Euroopa Liit
Euroopa Sotsiaalfond



Eesti tuleviku heaks

Introduction to I-Ludus

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LUDUS

- ◉ Business Simulation Game
- ◉ Used in universities and also in companies
 - Lufthansa
 - Volkswagen

for preparation of management positions

- ◉ Courses all over Europe
- ◉ My mail address:
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Course of the game

- Introduction to LUDUS & 2 test rounds
- Twice a week
 - > 3 weeks
 - > 6 main rounds with short discussions of results
 - > Results via Email
- business report
 - > business report about the 6 rounds
 - > basis for the grade

Business Report

- Starting business strategy and resulting structural aspects for the company
- short description of the decisions of the 6 periods and underlying economical reasons
- explanation why the company is prepared to be taken over by a new management
- final discussion of the course of the game
 - tasks within the group, changes of strategy, new experiences and knowledge, criticisms

Necessary management knowledge

- ◉ Basics in marketing
 - marketing mix / price-sale-function
 - experience curve, product life cycle
- ◉ Basics in accountancy
 - balance, income statement, depreciation
 - direct costing / contribution analysis, scarcity
 - managerial accountancy
- ◉ Basics in finance
 - cash management, credits, financial investments

Decision making

(1) Marketing

- prices,
- advertising costs,
- service costs,
- research costs,
- new product launch,
- market development,
- market research.

(2) Purchase, Personnel

- purchase of raw material,
- purchase of machines,
- recruiting/dismissing labour force,
- social expenditures.

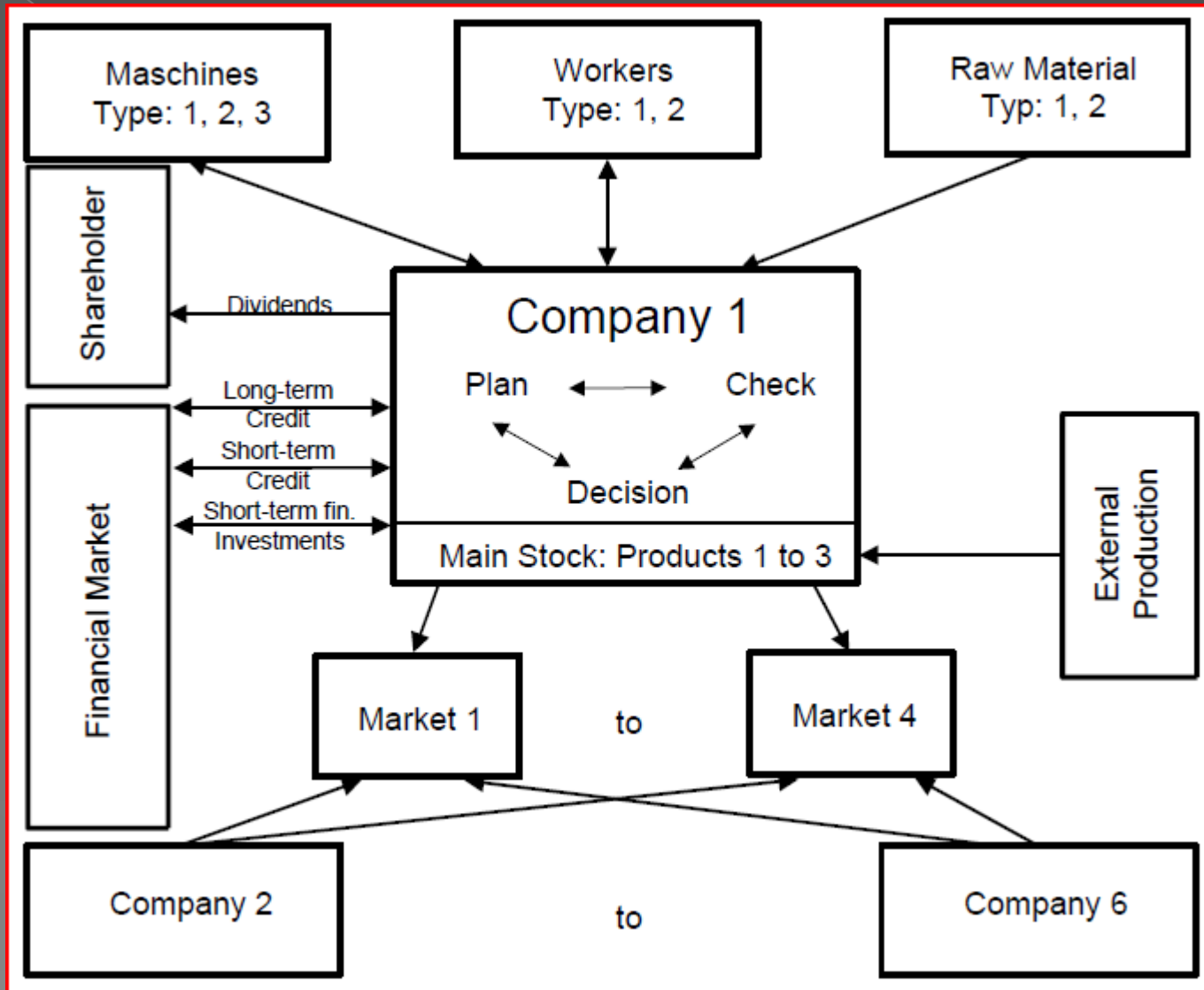
(3) Production, Transport

- internal and external production,
- maintenance (of machines),
- machine loading,
- stock keeping,
- transport (of products).

(4) Administration, Finance

- rationalization measures,
- handling of payment,
- short-term loans,
- long-term loans,
- financial investment,
- disposal of profits.

Economic model



Strategic considerations

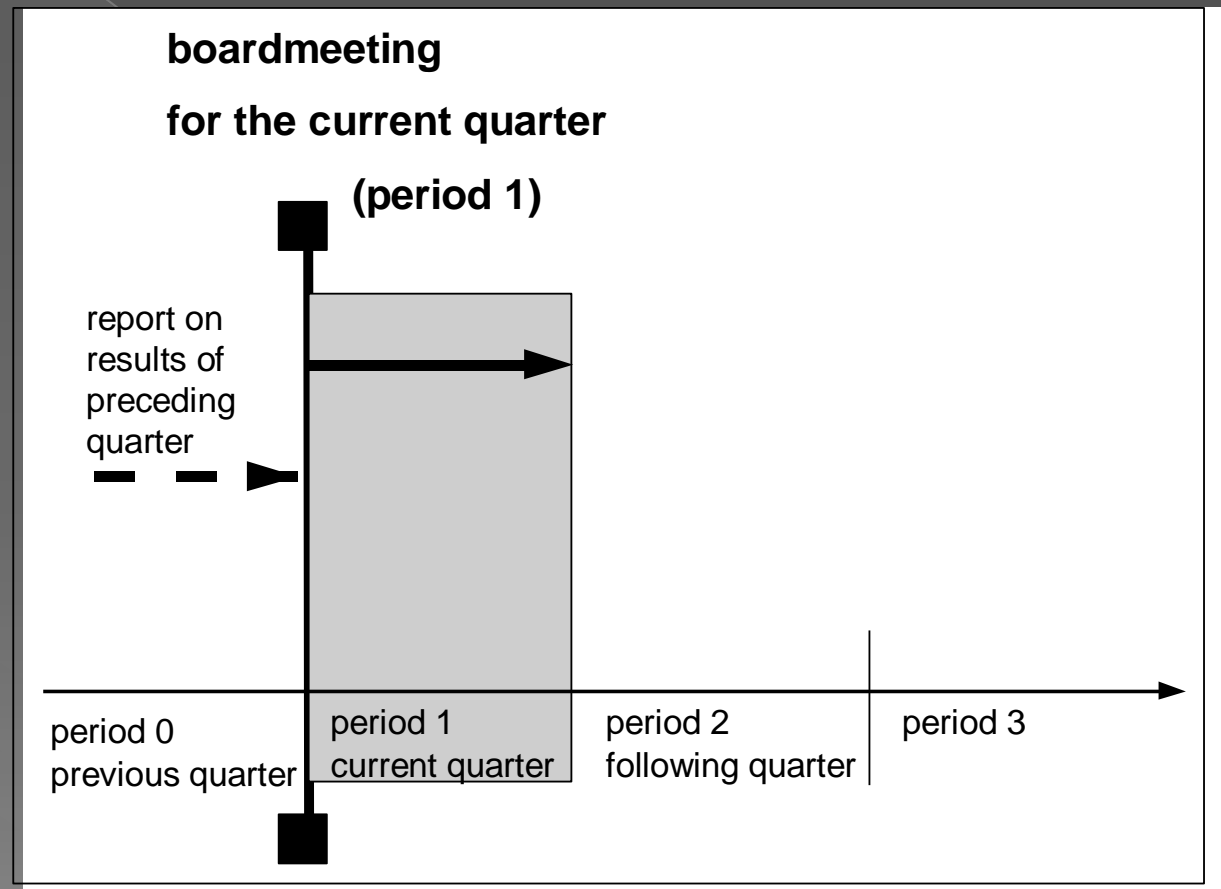
◉ Structure follows strategy

- Try to find a companies strategy
 - Cost leadership, quality leadership, ...
 - Then adapt the company structure to this strategy by restructuring the company
 - Try to keep the strategy as long as possible
- Otherwise: restructuring costs will kill you

Situation

- ◎ Up to 6 companies are competitors
 - > 2 products on 3 markets
 - P1 (*beer*) and P2 (*vodka*)
 - M1 Estonia
 - M2 Euromarket
 - M3 NAFTA
 - > The product quality can differ
 - > Whole production capacity in Estonia
 - > Transportation to other markets is necessary

Time of the Boardmeetings



Marketing Decisions

LUDUS Participant program - [Activity - Group No.1, Enterprise 1]

Game Activity Reports Window ?

Marketing Production Finance

Price

	Market 1	Market 2	Market 3	Market 4	
Product 1	3,50	3,65	3,75	3,60	USD/Unit
Product 2	12,50	13,00	13,50	12,75	USD/Unit
Product 3	42,50	43,50	45,00	43,00	USD/Unit

Advertis.

	Market 1	Market 2	Market 3	Market 4	
Product 1	0,850	0,375	0,650	0,125	mil. USD
Product 2	1,125	0,500	0,750	0,125	mil. USD
Product 3	0,600	0,400	0,450	0,050	mil. USD

Service

	Market 1	Market 2	Market 3	Market 4	
	2,000	1,000	1,500	0,250	mil. USD

Research

	Product 1	Product 2	Product 3	
	1,500	2,500	1,500	mil. USD

Apply Close

Situation before period 1... Group No.1 / Enterprise 1 Demo

Marketing-Decisions

- Marketing-Mix

parameters

price

product

place

publicity

Ludus

price

research

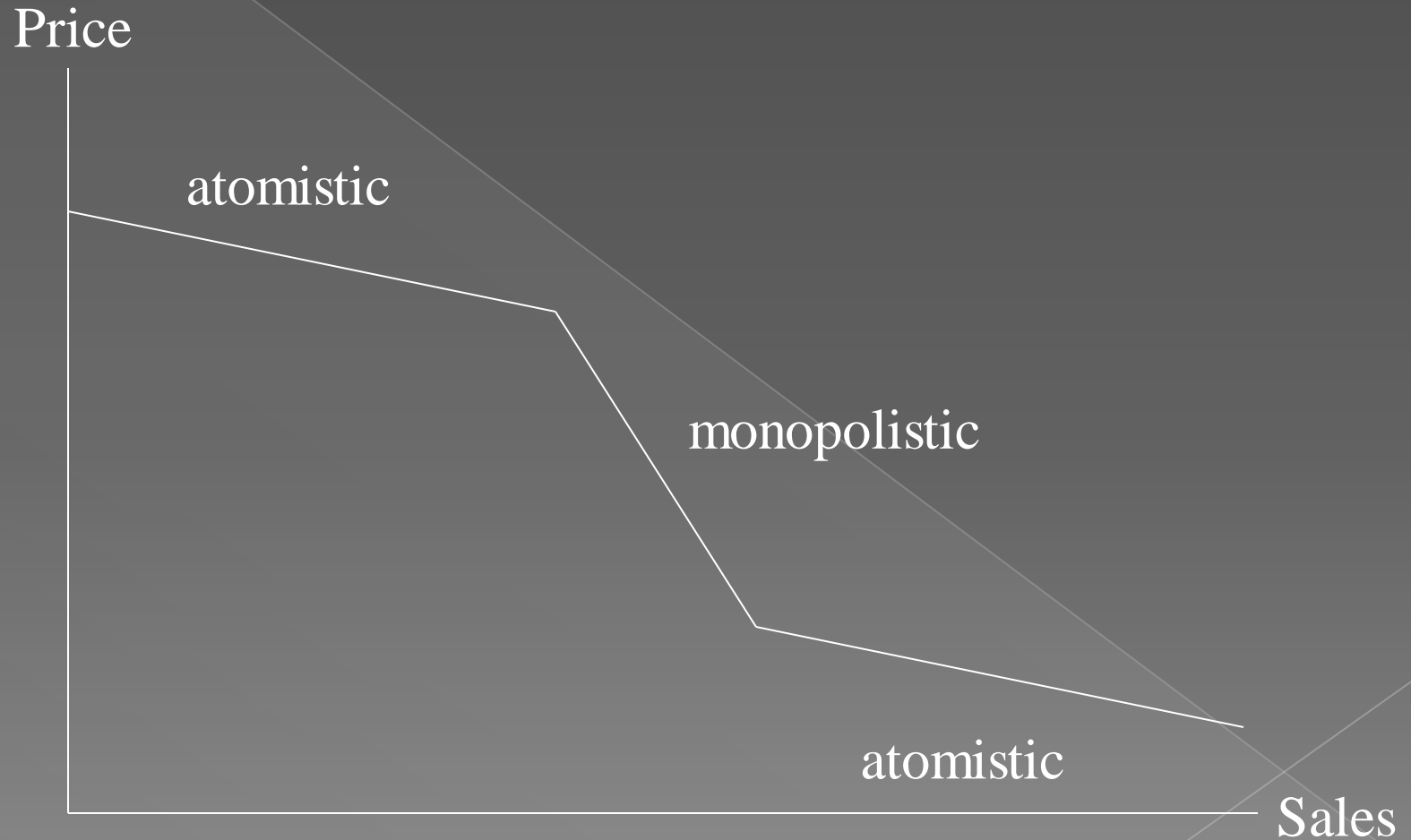
service

advertising

- P1 market in saturation

- P2 market in growth

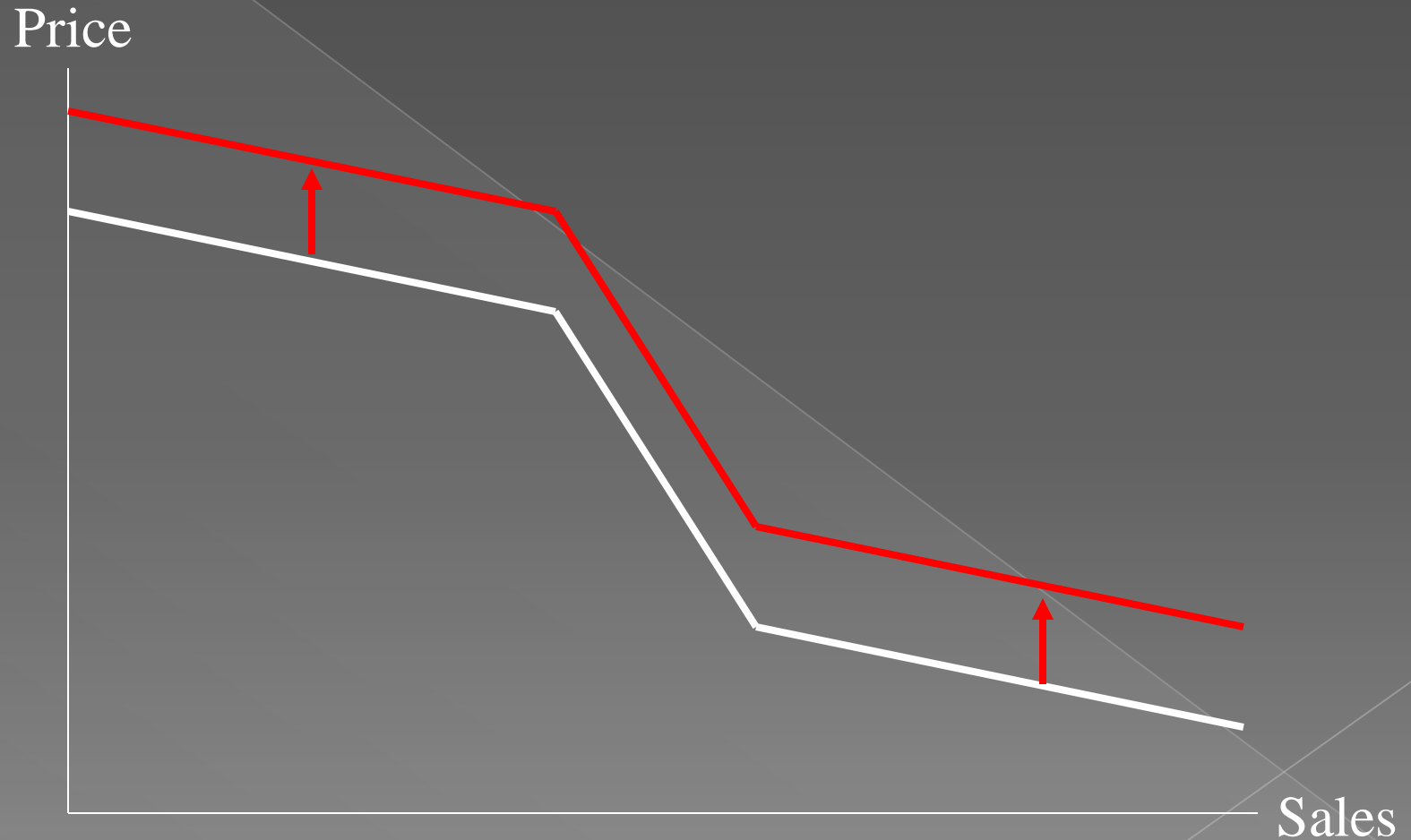
Price-Sales-Function



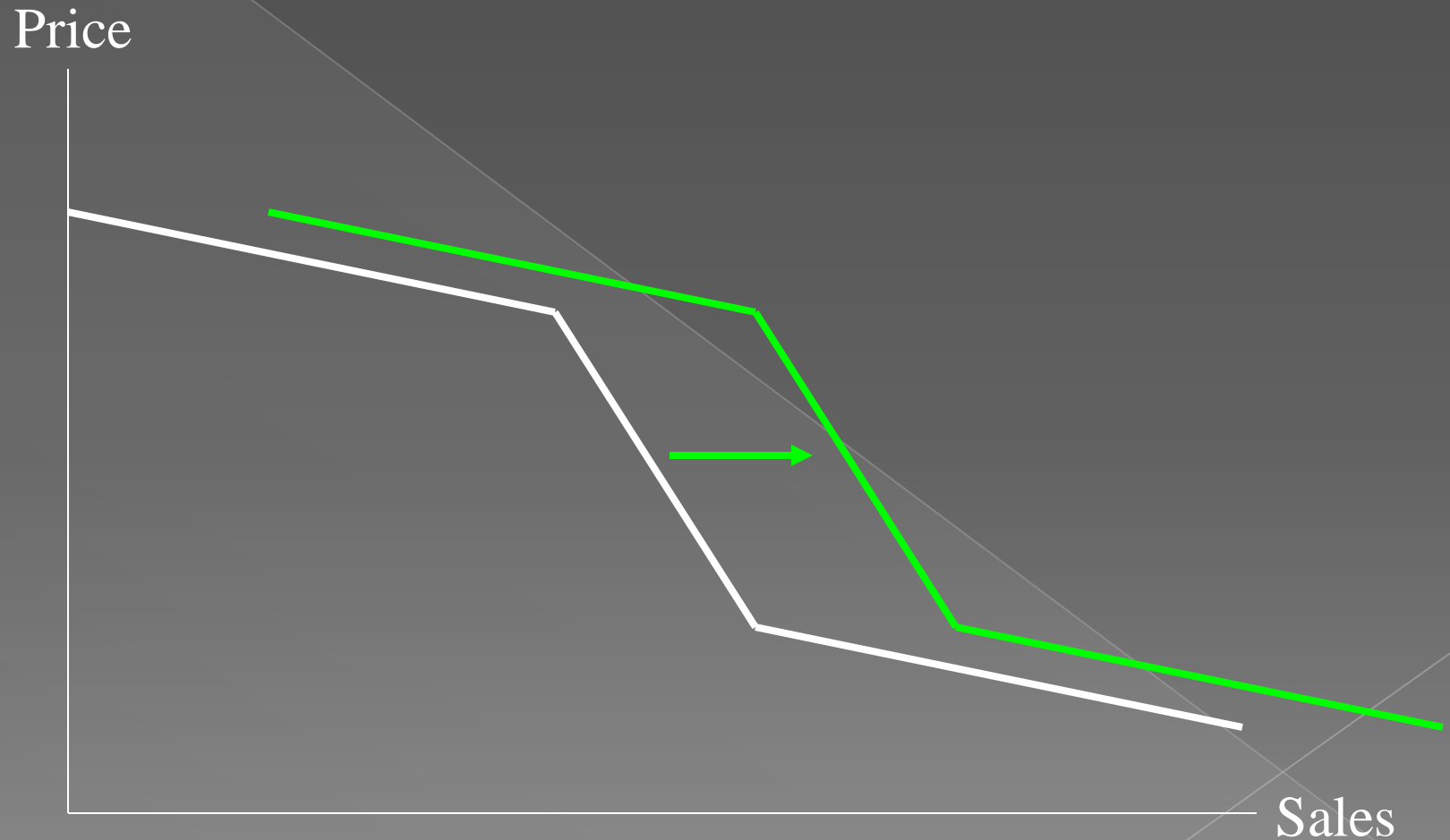
Marketing and the PSF

- Research expenses shift up the PSF
 - > *vertical effect*
 - > max. effect next period (focused on the future)
- Advertising expenses shift right the PSF
 - > *horizontal effect*
 - > focused on the actual period
- Service expenses have diagonal effect
 - > effect between advertising and research

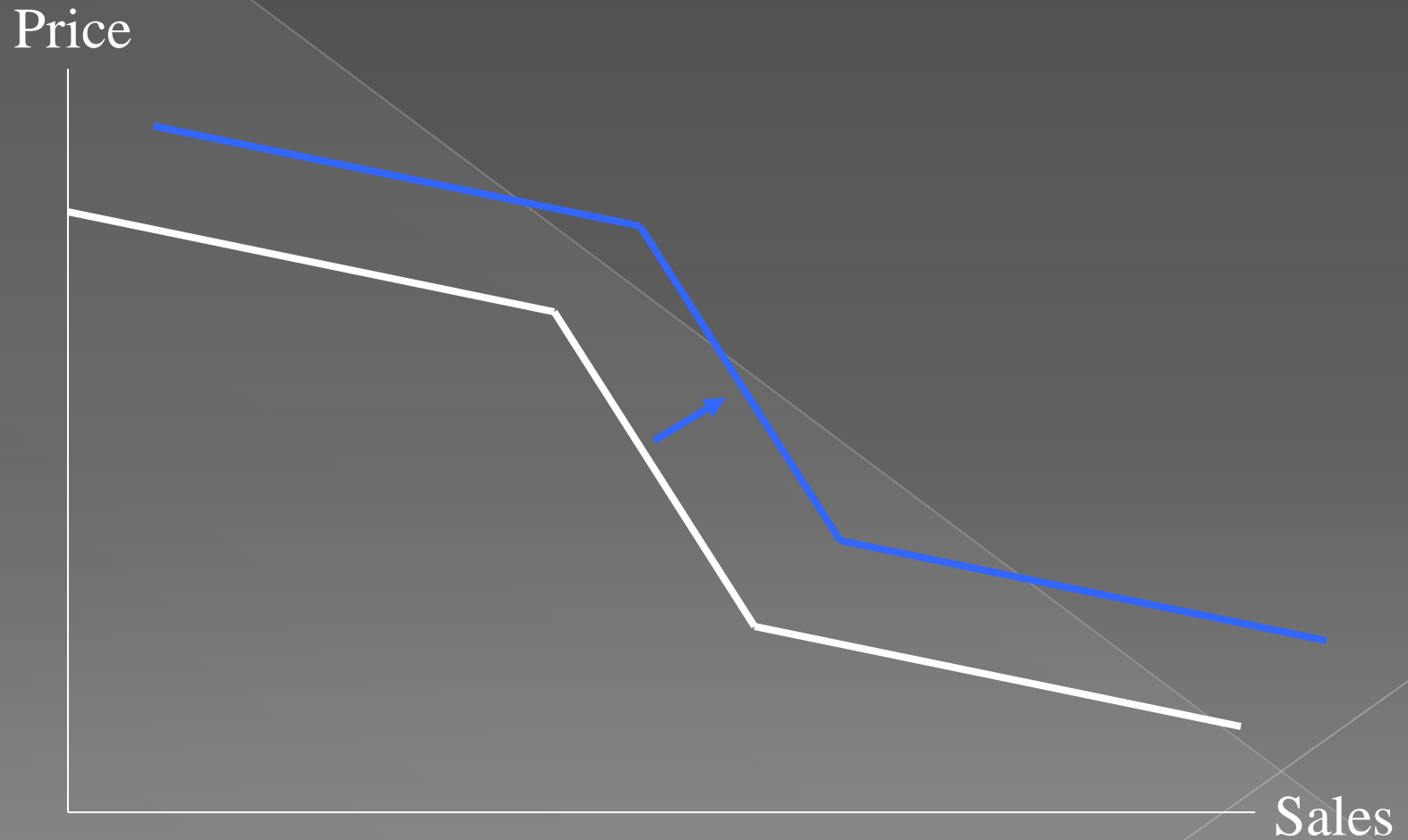
PS-Function and Research



PS-Function and Advertising



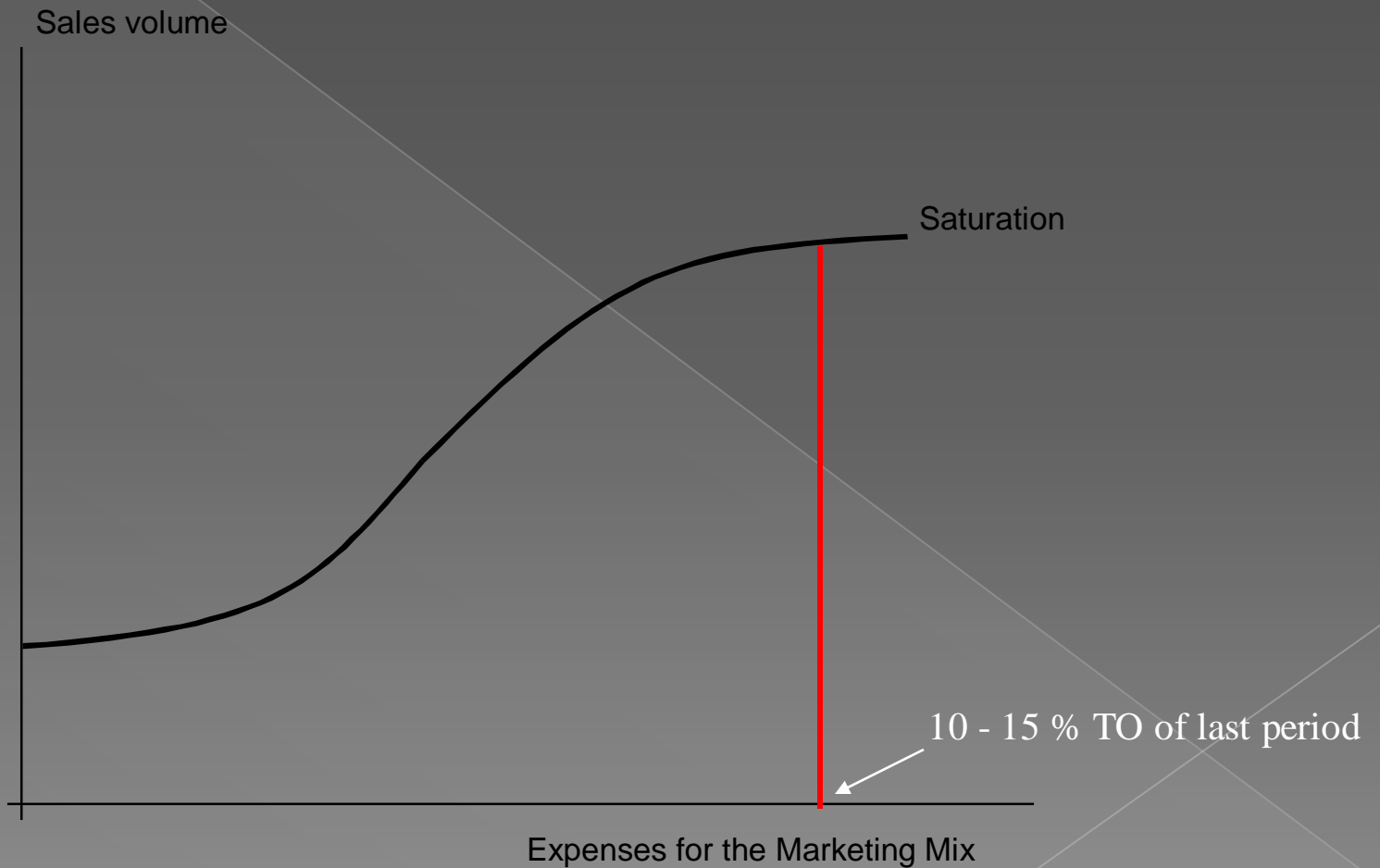
PS-Function and Service



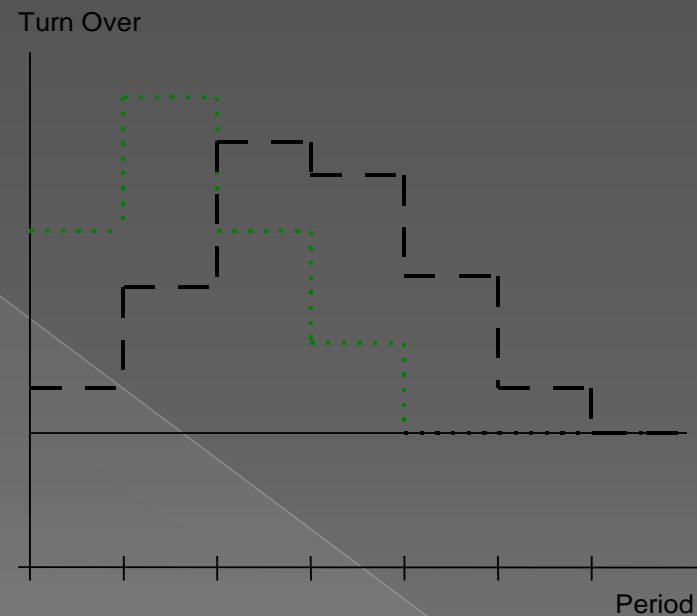
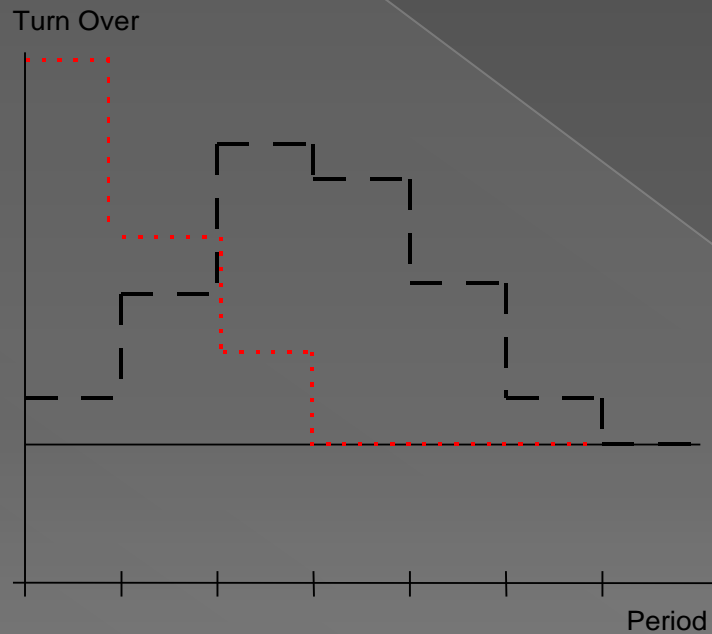
Impact of Marketing Expenses

- For each type of marketing expenses there are upper & lower bounds for the expenses
 - > above these points the money is wasted
 - > depending on the TO of the last period
- The impact of the marketing expenses are not constrained to one period
 - > advertising: peak in the upcoming period
 - > research: peak in the next period

Saturation points



Advertising-Research-Service



Price policy

	P1	P2
min. price	2,00	7,50
max. price	7,49	24,99
external basis price	3,00	10,00
max. production	99,999 Mio	9,999 Mio

Research

- Improves the quality level of the products
 - > internal 200 quality levels
 - > internal & external products are of same quality
- decreases production cost per unit
 - > experience curve effect / increases productivity
 - savings of raw material, time, working power
- expenses to strengthen the future position
- quality falls without research expenses

Marketing Tools

- ◉ Price
- ◉ Product (Quality)
 - > min. 1 Mio per product
 - > max. 10 % TO for P1, 15 % TO for P2
- ◉ Place (Distribution / Service)
 - > min. 1 Mio per market / max. 10 % TO
- ◉ Promotion
 - > no min. / max. ca. 10 % TO

Market Research

- Reports can be bought:
 - > Market research report 1 0,05 Mio EU
 - basic report
 - > Market research report 2 0,25 Mio EU
 - basic report plus report 2
 - > Market research report 3 0,5 Mio EU
 - basic report plus report 3

◉ Market research report 1

- competitors' prices (for different products/markets),
- competitors' markets shares expressed in % (turnover, sales figures for different products/markets),
- product quality estimation,
- competitors' post-tax income.
- estimation of competitors: stock price (balance sheet rate, stock price according to the Profit/Dividend Thesis).

◉ Market research report 2

- total turnover and sales figures as well as advertising expenses (products/markets),
- total service expenses (markets),
- total research expenses (different kinds of products).

◉ Market research report 3

- the single competitors' turnover,
- sale figures and advertisement expenses for the single kind of product and each single market.

Production Decisions

LUDUS Participant program - [Activity - Group No.1, Enterprise 1]

Game Activity Reports Window ?

Marketing **Production** Finance

Production

	Product 1	Product 2	Product 3	
Internal production	10,000	3,000	0,600	mil. units
External production	6,000	1,500	0,000	mil. units

Raw mat.:

	Type 1	Type 2	
Purchase	28	88	mil. units

Machines

	Kind 1	Kind 2	Kind 3	
Order	0	0	0	units
Junking	0	0	0	No.
Maintenance rate		43		thousandth

Personnel

Skilled workers	-15	Workers
Semi-skilled workers	10	Workers
Social costs	44	%

Transport

	Market 2	Market 3	Market 4	
Product 1	2,200	3,200	1,200	mil. units
Product 2	0,800	1,100	0,400	mil. units
Product 3	0,170	0,170	0,060	mil. units

Apply Close

Situation before period 1... Group No.1 Demo

Production

- 3 types of machines
 - > A1: max. 3,0 Mio TU
 - > A2: max. 1,0 Mio TU
 - > A3: max. 0,3 Mio TU
- Production coefficients (1. periode)

	A1	A2	A3
P1	0,50	0,20	0,025
P2	2,00	0,50	0,10

example: Production

planned units of production:

10 Mio P1 / 3 Mio P2

	A1	A2	A3
P1	5	2	0,25 MioTU
P2	6	1,50	0,30 MioTU
Sum	11	3,50	0,55 MioTU
#Mach.	4	4	2

Machines

- ◉ Max. 9 machines of each type
 - lifetime is 20 periods for all types
 - linear depreciation with 5 % pro period
 - new machines usable after 1 periods
 - depreciated machines will be junked automatically
- ◉ junking possible
 - immediate junking
 - junking price = 75 % of net book value
 - junking max. 1 machine per type & period

Internal & External production

- ◉ All production decisions are internal
 - ◉ purchase of external products possible
 - > external products have same quality level
 - max. 8 Mio units of P1 & 2 Mio units of P2
 - > discounts for purchase of external products
- Attention: ordered external products arrive in the next period (1 period of delay !)*
- ◉ stocked internal and external products cause 4 % stocking costs per period

Maintenance

- ◉ Depends on the used capacity of all machine types (operational use)
- ◉ fixed in ‰ of cumulative depreciation
- ◉ Minimum: 30 ‰ for 30 % op. use
- ◉ Maximum: 50 ‰ for 100 % op. use
- ◉ if the maintenance rate is not high enough the production is reduced

Personnel

- Figures of 1. period
 - > 377 skilled/ 1.570 unskilled workers
 - skilled/unskilled workers are not interchangeable
 - hire/fire costs money (advertising, compensation)
 - max. 200 / 200 fired workers per period
 - hired unskilled workers perform only 50 % in 1. period
- Social costs
 - influence rate of fluctuation & sickness
 - between 35 % and 60 % of the wages
 - only up to 12% changes each period

Special features

- ◉ Vacation
 - > Every 3. Quarter of the year
 - > only 2/3 of the normal output
 - > wages still paid as usual
- ◉ Gaps in labor force will automatically filled with loan workers. This causes additional labor costs of 100 %, i.e. loan workers cost the double

Production teams

	sW	uW	Performance
P1	1	8	150 tU
P2	2	11	40 tU

- experience curve effect increases performance
- example

P1: 10 Mio U = 67 Teams = 67 sW + 536 uW

P2: 3 Mio U = 75 Teams = 150 sW + 825 uW

217 sW + 1361 uW

Raw material

- ◉ 2 types of raw material for internal production
 - > type 1: 1,00 EU per unit
1 unit per P1 / 3 units per P2
 - > type 2: 0,15 EU per unit
7 units per P1 / 5 units per P2
- ◉ prompt delivery after order
- ◉ gaps in raw material are closed by express deliveries with a price of 140 %

Transport

- Products need to be shipped to markets
 - > no costs for Estonia (production market)
 - > freight rate per unit:
 - EU-Market: 0,20 P1 / 0,75 P2
 - NAFTA: 0,25 P1 / 1,25 P2
- shipped products must stay in the market
- unsold products need to be stocked
- stocked products follow quality changes

Financial Decisions

Marketing					Production					Finance									
<u>Market research</u>					No														
<u>Rationalization</u>					No														
<u>Own payment behaviour</u>					Term 1		Term 2		Term 3		Term 4								
					100		0		0		0		%						
<u>Short-term financial investment</u>					Investment 1		Investm. 2		Investm. 3										
					20		15		10		mil. EUR								
<u>Credits and dividends</u>																			
Short-term credit					63		mil. EUR												
Long-term loan					0		mil. EUR												
Early repayment of long-term loan					0		No.												
Dividends (per. 1,5,...)					0,00		EUR/Share												
										Apply					Close				

Rationalization

- ◉ Measure 1 (0,25 Mio Euro)
 - > decrease of OH-costs of 2% per period
 - > implementation of direct costing analysis
- ◉ Measure 2 (0,65 Mio Euro)
 - > decrease of OH-costs of 10% per period
 - > 1 period of delay
- ◉ Measure 1 must be implemented before Measure 2 can be realized

Financial decisions

- ◉ Market Research / Rationalization
- ◉ Own payment behavior
 - > 30d-2,5% / 60d-1,2% / 90d / 180d+bills+2,75%
- ◉ Short-term financial investment
 - > 3 investments with different risks
- ◉ Credits and dividends
 - > overdraft / short-term / long-term loans,
- ◉ losses of exchange only for market 3: 1%

Planning

- ◉ Available is a planning tool
 - > only for sales volume
 - depending on the marketing decisions
 - > estimated values for the upcoming period are calculated on the data basis of the last period
- ◉ *Values of the planning tool are historic data*
- ◉ Nevertheless the estimated sales volume gives a hint to evaluate the own decisions

Test Sales

LUDUS Participant program - [Planning (Group No.1, Enterprise 1) - Result of test-sales]

Game Activity Reports Window ?

Result of test-sales

<u>Product 1</u>		Total	Market 1		Market 2		Market 3		Market 4	
Sales (mil. units)	Old	10,000	4,000		2,000		3,000		1,000	
	New	10,50	10,71	4,38	4,46	2,05	2,09	3,13	3,20	0,94
Turnover (mil. EUR)	Old	36,150	14,000		7,300		11,250		3,600	
	New	37,94	38,70	15,32	15,63	7,48	7,64	11,75	11,99	3,38
<u>Product 2</u>		Total	Market 1		Market 2		Market 3		Market 4	
Sales (mil. units)	Old	3,500	1,500		0,700		1,000		0,300	
	New	3,74	3,81	1,67	1,70	0,74	0,75	1,05	1,07	0,28
Turnover (mil. EUR)	Old	45,175	18,750		9,100		13,500		3,825	
	New	48,19	49,17	20,82	21,24	9,61	9,81	14,17	14,46	3,59
<u>Product 3</u>		Total	Market 1		Market 2		Market 3		Market 4	
Sales (mil. units)	Old	0,600	0,250		0,150		0,150		0,050	
	New	0,61	0,62	0,26	0,26	0,15	0,16	0,16	0,16	0,05
Turnover (mil. EUR)	Old	26,050	10,625		6,525		6,750		2,150	
	New	26,58	27,12	10,89	11,11	6,70	6,84	7,02	7,16	1,97
<u>Total</u>		Total	Market 1		Market 2		Market 3		Market 4	
Turnover (mil. EUR)	Old	107,375	43,375		22,925		31,500		9,575	
	New	112,71	114,99	47,03	47,98	23,80	24,28	32,94	33,60	8,95

<< Back Apply Next >> Close

Situation before period 1... Group No.1 / Enterprise 1 No name of the game

Final Remarks

- ◉ Important points
 - > *Possible inflation with 1 period of delay!*
 - > Remember the 3. Period (vacation)
 - > Focus on Contribution margins
 - > Optimize the internal & external production
- ◉ export of actual data to Excel are possible
- ◉ Business report necessary for getting a note
 - > explanation of strategies and decisions