Prereading
MBA Fundaments of Accounting

Participants' Manual Top Sim General Management II, V 15.3

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1 WHAT IS TOPSIM – GENERAL MANAGEMENT?

TOPSIM – General Management offers a challenging, computer-based management simulation. Together with your teammates you will form a business team that will take over the leadership of a company in the photocopier industry. The simulation presents a realistic model of a company and provides participants the opportunity to:

- Learn quickly
- Learn in a risk-free way
- Gain practical experience with lasting, long-term effects

The management simulation is an interactive teaching and learning system based on the principle of:

LEARNING BUSINESS BY DOING BUSINESS

1.1 TRAINING OBJECTIVES OF TOPSIM – GENERAL MANAGEMENT

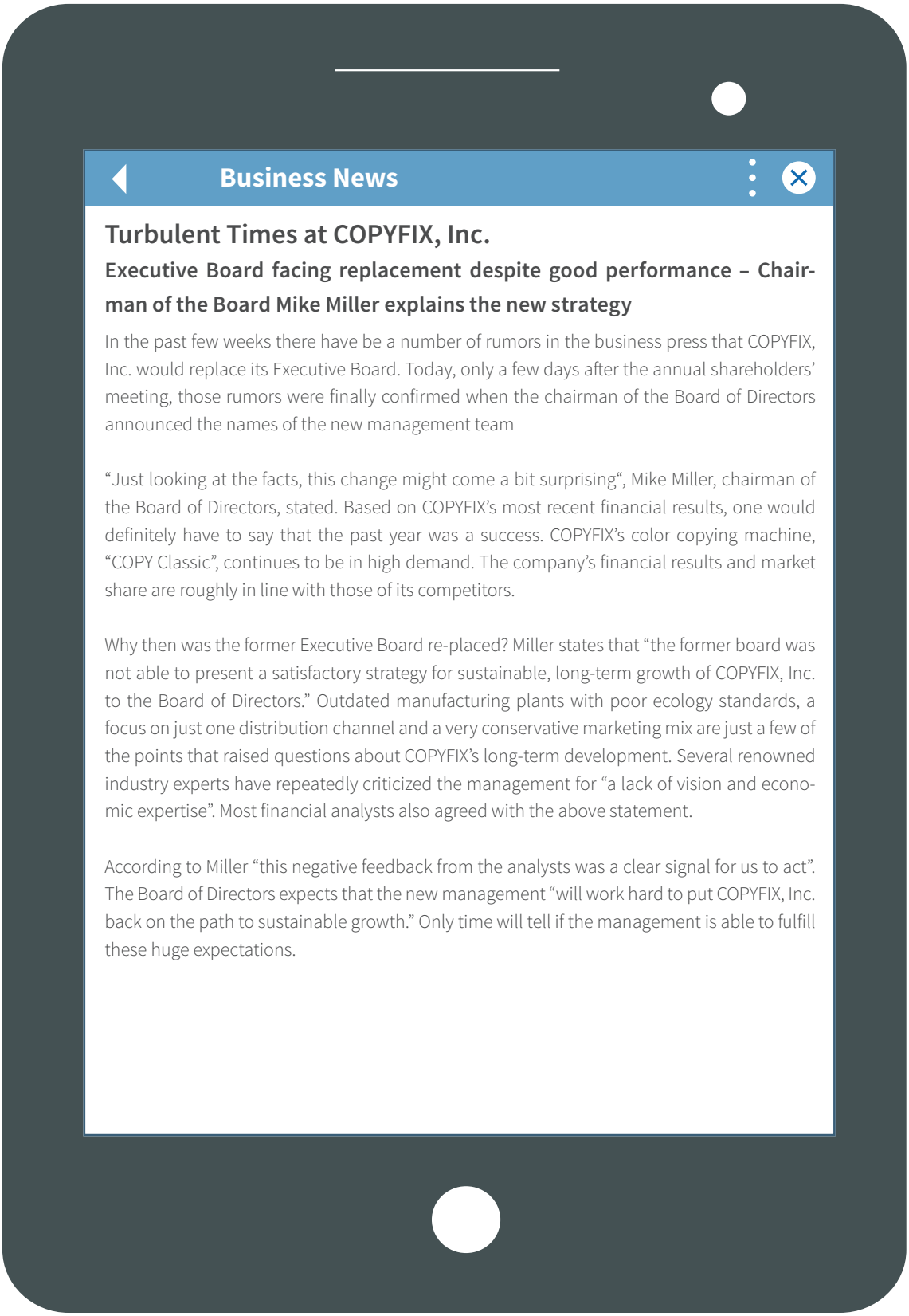
- Make better business decisions
- Gain experience thinking about the overall impact of your decisions
- Think more effectively about the links between different decision areas
- Define economic goals and strategies and implement them in a dynamic environment
- Understand the fundamentals of marketing
- Analyze financial figures and put knowledge into practice
- Learn to use business tools like cost accounting and income analysis
- Maintain control over the business under uncertain conditions
- Maintain overall control in difficult situations
- Learn to think and act in an interdisciplinary way
- Develop the ability to structure and solve problems
- Develop a view for the essential problems
- Practice effective communication through visualization
- Define and solve problems in teams with the help of data-processed planning models

1.2 COURSE OF THE SEMINAR

The business simulation TOPSIM – General Management is structured into two distinct phases: decision phases and evaluation phases. During the **decision phase**, the participants have to make operational decisions for their company. During the **evaluation phase**, the participants will have to analyze the results of the previous period and test their overall business strategy against current economic conditions. Usually, the instructors will use the time between these phases to either provide relevant **background information** to the participants or to offer a detailed evaluation of recent results and events from the simulation.

2 INTRODUCTION

2.1 NEWS CLIPPING FROM THE DAILY OBSERVER



2.2 THE COMPANY

The following paragraphs give a brief introduction of the departments of COPYFIX, Inc.:

SALES

- Marketing and sales people from the sales department provide customers and business partners with information and knowledge about our company and products
- All customer requests related to sales are handled by this department

RESEARCH & DEVELOPMENT

- The R&D-department is the creative heart of our company
- Together with leading scientists in the field of copy machines, we develop new products and improve the quality of our existing ones in order to better satisfy our customers' needs
- All newly developed products are extensively tested to ensure that they meet the internal quality standards

PURCHASING

- The purchasing department procures all of the materials, parts and supply items needed for the production of our product "COPY Classic"

PRODUCTION

- The production department uses state-of-the-art production lines to manufacture our photocopiers
- Our highly qualified employees guarantee both the craftsmanship and durability of our "COPY Classic" product

HUMAN RESOURCES

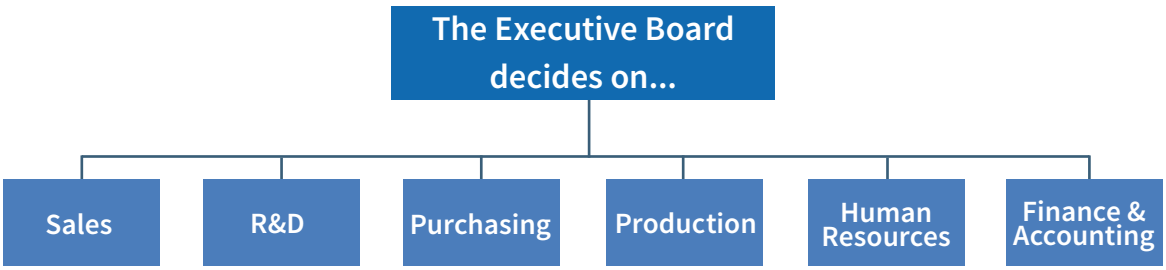
- The HR-team focuses on everything related to our workforce, from staffing to general personnel support
- In addition, the HR-team is also responsible for planning and conducting internal trainings for all employees
- Our employees are part of our competitive advantage

FINANCE & ACCOUNTING

- The accounting department monitors all numbers, data and facts related to COPYFIX, Inc.
- Our accounting team is well-versed in modern accounting and business practices, and helps to insure the financial success of the company

3 DECISION AREAS

In the simulation TOPSIM – General Management, your team will take over responsibility for COPYFIX, Inc. as the new executive board. As the newly elected executive board, you will have to make key decisions in all major fields of corporate activity:



The following description of the different decision areas should help you to gain an overview of all decision parameters within the simulation, along with their corresponding impacts. The number and complexity of decisions will increase during the course of the seminar. Additionally, the decisions that you ultimately make will be highly dependent on the specific scenario conditions present in each period of the simulation.

3.1 SALES

3.1.1 MARKETING-MIX

In the sales department, your main task is to design an effective marketing mix. The marketing mix is a combination of decisions in four areas: product policy, pricing policy, distribution policy and communication policy. Those are also known as the "4 P" and represent the main factors for the determination of the sales potential. Your task is to find the mix of decisions that leads to the intended effects.

The following table gives you a brief overview over the four marketing tools and respective decisions. In the following, they are described in more detail.

MARKETING TOOL	INFLUENCING FACTOR
Product: Product policy	Number of R&D employees at the end of the period
Price: Pricing policy	Pricing decision
Place: Distribution policy	Number of sales employees at the end of the period
Promotion: Communication policy ▶ Advertising ▶ Brand Awareness	Includes: ▶ Investments in advertising ▶ Investments in corporate identity and advertising

Your marketing decisions should be determined based on both your overall strategy as well as the overall conditions of the market. Keep in mind that you will never be able to fully predict the actions of your competitors. Furthermore, pricing and competitive aggressiveness of your competitors will have an influence on your potential sales volume. This means that in certain circumstances, sales growth could actually be higher or lower than what is predicted in the news.

3.1.2 Description of the Product and Product Policy

COPYFIX, Inc. manufactures and sells high-quality color copying machines under the brand name “COPY Classic”. The product is characterized by the following features:

PRODUCT SPECIFICATIONS OF „COPY CLASSIC“			
Type	Desk model		
Copying speed	36 A4 copies per minute		
	18 A3 copies per minute		
Copy volume	1 – 99 copy machine per run		
Dimensions	W	L	H
	804 mm	664 mm	415 mm
Weight	80 kg		
Warm up time	Approximately 7 seconds		
Paper supply	2 cassettes of 500 sheets (A3, A4)		
Paper formats	Cassette A4 - A3		
	Sheet feeding A5 - A3		
Copying material	Paper cassette, single sheet feed		
	Transparency		
	Self-adhesive labels		
Accessories	“Job interrupt”-key		
	Self-diagnosis system		
	Auto reset		

Copy machines are regularly examined by the consumer magazine TechTest, which evaluates all technological aspects related to the product. TechTest’s evaluations are then quantified using the technology index. The technology index is based on copy speed, copy quality and ease of operation. The ecology index is determined based on energy consumption, machine recyclability, and the amount of emissions produced during the production of the machine. Based on its current technological features, “COPY Classic” ranks as average in comparison to most other copying machines. In period 0, “COPY Classic” received the following evaluation:

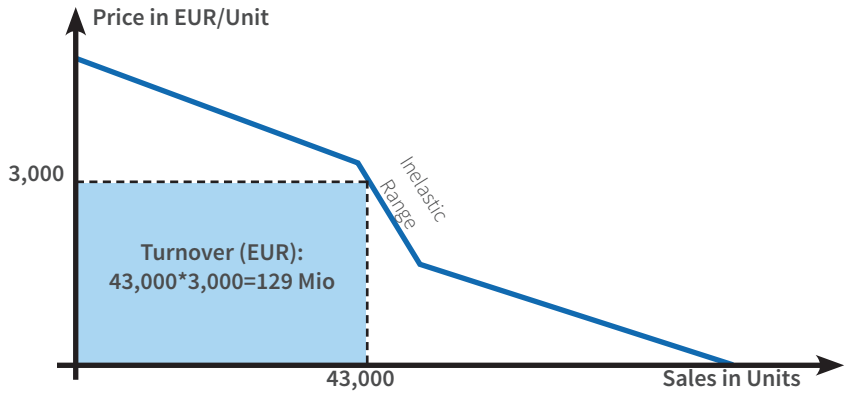
Technology index in period 0: 100.0
Ecology index in period 0: 100.0

Such publications by the consumer magazine TechTest are considered as guidelines for consumers. Consequently, index values are viewed as important product attributes: Therefore, as the indices for technology and ecology improve, the market acceptance for COPY Classic will increase. Beside the absolute value of the technology index, the relative distance to the competition is important. Improvements in technology and ecology can primarily be achieved by increasing investment in R & D (see point 3.2. research and development). Products with an index under 100 points are considered as not yet marketable and therefor avoided by customers.

3.1.3 Pricing Policy

When competing with other photocopier suppliers, price is an important marketing lever. When changed, it will have an immediate impact on sales. Therefore, pricing is an essential tool that can be used to differentiate your product from other products during competition. At the beginning of the game, the price of the machine on the domestic market (referred to as "market 1" in the reports) is set at 3,000 EUR.

Generally speaking, an increase in price usually results in a smaller sales volume. On the contrary, a lower price makes more photocopier sales possible. This correlation is called the price-demand function and is depicted below:



(**Note:** This is an illustration and does not represent the actual function)

There is a price range where a change in price has a weaker effect on the demand. That is the area where the diagram curve is steeper. This range is called “inelastic” or “low-reacting”. The current price of the "COPY Classic" is within this range. The inelastic range varies from the current average market price of 3,000 EUR by approximately +/- 5%. You can choose to increase or lower the price from one period to another period. However, keep in mind that a dramatic price change needs to go hand in hand with other corresponding management decisions to be successful. For example, if you charge a high price for your product you should also offer high quality. If you charge a relatively low price, you should also produce at low costs.

The amount of photocopiers sold multiplied by the price charged per photocopier results in the total revenue for the period. The revenue at the end of period 0 is the amount of money that COPYFIX, Inc. makes by selling 43,000 "COPY Classic" at a price of 3,000 EUR. So, the resulting revenue in period 0 is:

43,000 Units *3,000 EUR = 129,000,000 EUR

The colored rectangle in the graphic above symbolizes the revenue. If applicable, sales to bulk buyers or requests for bids are added.

Product demand reacts strongly to price decisions. For example, a low price can result in increasing sales, but the sales revenue may not be sufficient enough to cover all the costs of the company. So before lowering the price significantly, check first whether you can produce a larg-

er amount of photocopiers at a cost-efficient level. On the other hand, very high prices can result in a significant decrease in sales because customers go over to competitors.

Therefore, it is necessary to consider the expected sales volume as well as the expected sales revenue when making a price decision. The sales volume depends on various other factors, not only the price. That is why you also need to predict the buying behavior of your customers, the actions taken by your competitors and future market development.

3.1.4 Communication Policy

Communication expenditures can be divided into two sections:

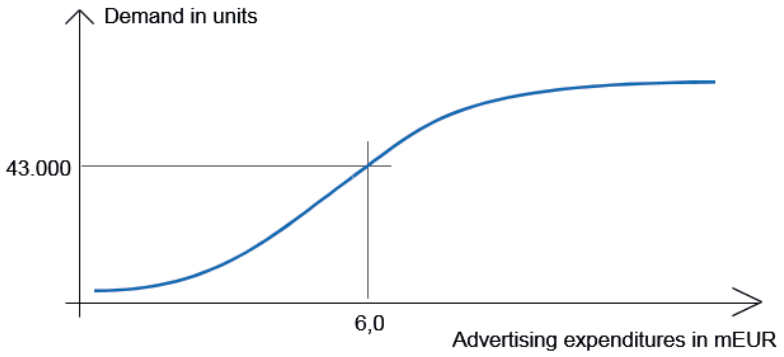
- Advertising and
- Corporate Identity.

Combined, those tools determine your brand awareness. In turn, brand awareness affects the market share of all your products.

Both tools work in a different way, so make sure you differentiate between the effects you want to achieve. In addition, you should check that the level of investment is related to expected sales and turnover. Brand awareness can decrease over time if you considerably reduce the investments.

3.1.4.1 Advertising

The most common marketing tool is marketing expenses. This includes flyers, radio ads, web presence and similar advertising media that addresses a large potential clientele. Normally, an increase in advertising expenditures will also increase demand for your product. Advertising will have an effect over several periods, yet the most pronounced effect will occur in the period in which the advertising occurs. The effect of advertising on demand is illustrated in the following graph:



(**Note:** This is an illustration and does not represent the actual function)

The diagram illustrates that if your advertising expenses are only very small, they have hardly any impact. On the other hand, too much advertising has very little additional positive impact; this additional money has been spent almost for no gains. The advertising budget in the initial

period is 6 mEUR. Experts believe that an advertising budget of 7 mEUR would lead to about 2,000 additional photocopiers sold.

The impact of advertising on demand will also be influenced by the difference between your company's budget and the budget of your competitors. The strength of the advertising effect depends furthermore on the price-performance ratio. The better the price-performance ratio, the stronger the achieved advertising effect. For this reason, a high price combined with high product quality (high technology index) might be more attractive for customers than a low price combined with low product quality.

3.1.4.2 Corporate Identity and Awareness

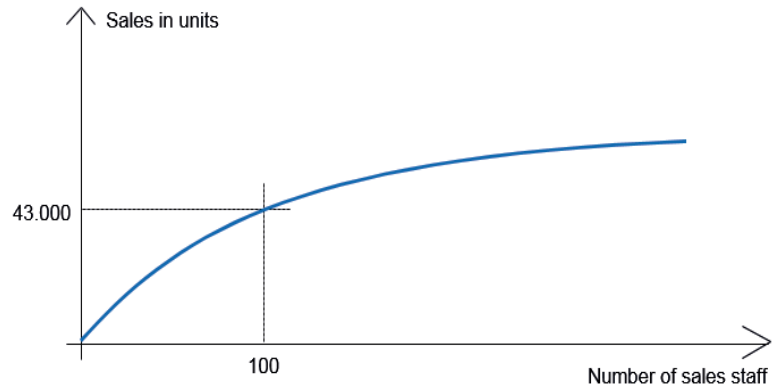
An additional communication instrument that can be employed by the company to increase brand awareness and positively influence sales is your company's corporate identity (CI). However, while a favorable corporate identity is definitely helpful, it may not be directly related to the sales volume. Therefore, experts disagree as to whether it has any immediate effects. It is clear, however, that the company's corporate identity is an important factor in the long term development of the company and has a relatively long-lasting effect. For a company of the size of COPYFIX, Inc., CI expenditures of approximately 3.00 mEUR are common. When planning the CI budget, you should also be aware of the diminishing marginal utility of your CI investments.

Every period, an index determines the overall awareness of the company as viewed by the public. In addition, the advertising expenses play a significant role as well. While these have an impact on the awareness of the company on a particular market, expenses for CI have a positive impact on the overall awareness of the company (scattering effect).

Please note that awareness can decrease over the time if you strongly reduce expenses for CI and advertising.

3.1.5 Distribution Policy

In period 0 "COPY Classic" is sold to specialized retail traders on the domestic market (market 1) by a sales force of 100 employees. An increase in the utilization of personnel improves sales opportunities. Experts predict that an increase of the sales force by 10 persons could increase sales by approximately 2,000 units. Generally, the following relationship exists between the number of sales staff and the units sold:



(**Note:** This is an illustration and does not represent the actual function)

Like advertising expenses, sales activities do not only lead to higher sales in the current period. However, consider that higher costs come through additional recruitment. However, please note that the number of sales employees should be considered in relation to the sales volume. A significantly higher sales volume means that more sales employees will be needed in order to be able to maintain the sales quality.

Supplying copy machines to specialized retail traders (market 1) involves packaging and transportation costs of 25.00 EUR per photocopier.

3.1.6 Additional Sales Opportunities

In addition to selling to specialized retail traders, there are also some other opportunities available in the domestic market. For example, the company can supply private bulk buyers, and/or respond to requests for bids from public authorities.

3.1.6.1 Sales to Bulk Buyers

All companies can sell to bulk buyers. Bulk buyers set a fixed price that they are willing to pay and also indicate a maximum amount that they are willing to purchase (however, a smaller quantity can be supplied if necessary). The quantity required by the bulk buyer will be supplied in the current period and takes precedence over sales to retailers. No distribution costs are incurred when selling to bulk buyers. This distribution channel may be used to reduce inventory; however, contribution margins are usually lower in comparison to sales to retail stores. The sale to a bulk buyer has no influence on the sales to the regular specialized retail stores.

3.1.6.2 Sales through Requests for Bids

When public authorities have a specific need for photocopiers in large quantities, they request bids by stating the quantity that they require. Companies can respond to such requests by bidding. The company offering the lowest price will then be awarded the contract. Income from new sales and revenue from a successful bid in one period will be received in the following period. Furthermore, delivering for tendered bids takes priority over supplying retailers. In the

event that two companies quote the same price, the company whose product possesses the better product attributes will receive the contract. There are no distribution costs associated with winning a bid.

3.1.7 Insufficient Capacity to Supply

Your products are supplied in the following order:

1. Contracts resulting from requests for bids,
2. Commitments to bulk buyers,
3. Supply to retailers (domestic market),
4. Supply to retailers (foreign market).

If you create demand (due to your marketing mix) that your company is unable to satisfy, you will lose these sales due to your insufficient supply capacity. Approximately 80% of the demand that you are unable to meet will then be distributed among the other companies in the simulation in proportion to their existing market shares. As a result of this distribution, one of the other companies might also face an inability to supply. In this case, the demand which was not satisfied by this company will not again be distributed to the rest of the companies. Therefore, it could be the case that less than 80% of the unsatisfied demand is distributed to other companies.

3.1.8 Customer Satisfaction

Customer satisfaction also has an important (but difficult to measure) influence on demand. Customer satisfaction is calculated per product and for every market. It is measured with an index. High customer satisfaction leads to a high index value, while a low index value means that customers are experiencing a lower level of satisfaction.

Experts state the following as factors of customer satisfaction:

FACTOR	EFFECT ON CUSTOMER SATISFACTION
Price changes	Customers prefer constant or decreasing prices.
Ability to supply in previous period	Inability to supply annoys consumers.
Stock of old equipment	Customers always want the most recent and best-designed products. A large stock of old equipment may lead to dissatisfaction among customers.
Environmental index	An environmentally sustainable product has a positive influence on customer satisfaction.

3.1.9 Market Research Report for the Industry

In order to obtain information on the marketing efforts of your competitors, in any period you may purchase a market research report for 100,000 EUR. The market research report contains information about the marketing mix of the competition: Price and quality of the offered product; Advertising expenses and number of sales employees as well as awareness and customer satisfaction on the individual markets.

3.2 RESEARCH & DEVELOPMENT (R&D)

Companies must continuously improve their products in order to keep up with the technological progress, the increasing environmental awareness of the consumers, and the growing pressure from competitors. To further develop the "COPY Classic", the COPYFIX, Inc. can take the following measures:

TECHNOLOGY INDEX	
Decision	Number of R&D employees at the end of the period
Result	Increase of quality of photocopiers (higher technology index)
Effect	▶ Positive impact on market share ▶ Increase in costs for rework because of higher requirements ▶ Please note that there is no linear relationship between the number of engineers and technological progress (decreasing marginal utility), that is, 200 employees are not twice as productive as 100 employees are.

ECOLOGY INDEX	
Decision	Expenses for external consultancy services in the ecological area
Result	Increase in environmental sustainability and reduction of operating costs → Ecology index rises
Effect	▶ Positive impact on the market share ▶ Costs for rework due to increased technological requirements (egg. accuracy requirements, higher complexity)

VALUE ANALYSIS	
Measure	Expenses for external consultancy services in the area of value analysis
Result	Increase in efficiency → Value analysis index rises
Effect	▶ Consumption of materials decreases ▶ Increased costs through rework ▶ No influence on the market share

Decisions for period 0:

AREA	DECISION	INDEX VALUE
Technology	35 employees in R & D	100.0 (referring to the analysis of the consumer magazine "Tech-Test")
Ecology	2.50 MEUR	100.0
Value Analysis	1.50 MEUR	1.00

3.3 PURCHASING

3.3.1 Requirement and Conditions

For the production of one "COPY Classic", one unit "input materials" must be used. Value analisis reduces the required input material necessary for production (i.e. with a value analysis index of more than 100.0 less than one unit of input materials is needed per copy machine “COPY Classic”). The demand for input materials is calculated as follows:

Demand in untits = Units of COPY Classic to be produced * 100 / Value analisis index

The pricing from you current supplier is as follows:

UNITS	EUR / UNIT
< 30,000	650
< 50,000	550
< 70,000	450
70,000 and more	400

All units/parts that are ordered will be available for use in the same period in which they are ordered. In case that resources and parts are not sufficient, the shortage will be balanced. The balance will automatically take place through special actions such as express deliveries, air freight etc., which have to be paid with a 20 % price premium.

3.3.2 Inventory for Finished Products and Input Materials

The storage costs for each finished product and each unit input material equals 100 EUR and 50 EUR, respectively. Currently, you have 15,000 input materials and 5,000 "COPY Classic" on stock.

Here is an excerpt from the inventory report at the end of period 0:

INPUT MATERIAL – COPY CLASSIC			
	Amount	Inventory	
	Units	*EUR/Unit*	*mEUR*
Initial Inventory	25.000	500,00	12,50
+ Delivery by supplier	30.000	550,00	16,50
+ Subsequent delivery	0	780,00	0
- Amount processed	40.000	527,27	21,09
= Final Inventory	**15.000**	**527,27**	**7,91**

FINISHED PRODUCTS – COPY CLASSIC			
	Amount	Inventory	
	Units	*EUR/Unit*	*MEUR*
Initial Inventory	8,000	2,020.00	16.16
+ Quantity produced	40,000	2,052.23	82.09
+ Externally produced	0	2,000	0
- Quantity distributed	43,000	2,046.86	88.02
= Final Inventory	**5,000**	**2,046.86**	**10.23**

From the table you can learn that the final inventory of 5,000 "COPY Classic" have production costs of 2,046.86 EUR/Unit each. This value is the result of a mixed calculation using the initial inventory and quantity produced:

(16.16 MEUR + 82.09 MEUR)/(8,000 Units + 40,000 Units) = 2,046.86 EUR/Unit

3.4 PRODUCTION

3.4.1 Production Lines at the Start of the Simulation

At present, COPYFIX, Inc. possesses four, type A production lines numbered 1 through 4. The following data applies to plants currently in use:

PRODUCTION LINE	ACQUISITION PERIOD	ACQUISITION VALUE	REMAINING RUNNING TIME	DEPRECIATION	NET BOOK VALUE	OTHER FIXED COSTS
		MEUR	Periods	MEUR/Period	MEUR	MEUR
Typ A Line No. 1	-8	12.50	1	1.25	1.25	1.50
Typ A Line No. 2	-7	15.00	2	1.50	3.00	1.00
Typ A Line No. 3	-6	20.00	3	2.00	6.00	0.50
Typ A Line No. 4	-5	20.00	4	2.00	8.00	0.25
Total		**67.50**		**6.75**	**18.25**	**3.25**

PRODUCTION LINE	NORMAL CAPACITY	MAINTENANCE		RATIONALIZA-TION	AVAILABLE CAPACITY	ENVIRONMENTAL INDEX
	Units	MEUR	Factor	Factor	Units	Points
Typ A Line No. 1	8,000	1,50	0,97	1,00	7,760	83
Typ A Line No. 2	9,000	1,50	0,97	1,00	8,730	90
Typ A Line No. 3	11,500	1,50	0,97	1,00	11,155	95
Typ A Line No. 4	13,500	1,50	0,97	1,00	13,095	98
Total	**42,000**	**6,00**			**40,740**	**91.5**

The production lines have been in use for a while and are almost completely depreciated. Therefore, you should think about investing in new, modern production lines.

You are using straight-line depreciated for your machines:

Yearly depreciation = Acquisition Value/Running Time

Once production lines are depreciated, they may still be utilized for production purposes.

Regarding profitability, a high utilization is important; otherwise, the costs of production would be passed on less products and the costs per unit are in turn higher. However, excessive workload (utilization >100%) leads to additional costs, because another shift has to be operated. This causes fixed costs of 2.50 mEUR.

Other fixed costs from the production lines include for example insurance costs resulting from already existing contracts.

3.4.2 Need of and Adjustment of Production Capacity

To manufacture one "COPY Classic" you need one capacity unit of your production lines. You can change the capacity available through the following measures:

- Investments in new production lines,
- Disinvestment of old production lines,

- Maintenance,
- Rationalization
- Overtime.

The capacity demand may be different for new products.

3.4.2.1 Investment in new Production Lines

For the production of "COPY Classic", production lines of Type A, B and C can be purchased. A maximum of nine production lines may be purchased per type in addition to the four Type A production lines owned by the company at the beginning of the game. Newly acquired production lines are immediately available for production use in the period in which the order is made.

Production lines (Type)	Purchase price (mEUR)	Duration (periods)	Normal capacity (Units / period)	Other FC (mEUR / period)	Environmental index
A	20,00	10	14,000	0.3	100.0
B	25,00	10	18,000	2.0	105.0
C	30,00	15	22,000	2.5	110.0

3.4.2.2 Disinvestment of Old Production Lines

Production lines can be disinvested (scrapped), and a plant that has been scrapped won't be available for production any longer (scrapped at the beginning of the period). Fully depreciated lines are not scrapped automatically. In order to disinvest a certain production line, you are required to enter the number of the line in the decision form. From the sale, your company will receive proceeds equal to a plant-specific percentage of the net book value . For Type A production lines this percentage equals 20% (Typ B 25%; Typ C 30%).

In case you disinvest a production line, the proceeds can be found in the Cash Accounting report and in your Profit and Loss Statement under "Other Expenses". You cannot disinvest all your production lines, that is, you have to keep at least on plant.

EFFECTS OF DISINVESTMENT		
Profit and Loss (Cost of Sales method)		
Depreciation (Net book value)	=	Other expenditure
Residual revenue	=	Other income
Financial Report		
Residual revenue	=	Deposit from disinvestments

The accounts "Other Expenditure" and "Other Income" are reported together in the Profit and Loss Statement.

3.4.2.3 Maintenance

Production lines are subject to constant wear and tear, which can result in reduced production capacity if not held in check. However, such problems can be avoided by performing regular production line maintenance. This also applies to newly acquired production lines.

The following figures demonstrate the relationship between maintenance costs and the degree to which capacity is available. This relationship applies to all production lines.

Maintenance Costs per period and per production line in mEUR	Degree of capacity availability as % of normal capacity
0.1	50 %
0.5	70 %
0.7	80 %
1.0	95 %
1.5	97 %
3.0	99 %
4.0	100 %

Normal Capacity * Degree of Availability = Available Capacity I

3.4.2.4 Rationalization

The available production line capacity can be further increased through rationalization measures. You can decide on a budget for the rationalization of the individual facility type. A one-time rationalization applies for all facilities of this type (even for the ones that will be purchased in future).

The entire rationalization expenditure from a period is claimed in the same period as the costs. The available capacity amount after rationalization is referred to as “Available capacity II".

Available Capacity * Rationalization Factor = Available Capacity III

3.4.2.5 Overtime

Overtime can further increase the capacity available by up to 10%. The simulation will automatically schedule overtime when the planned production volume is higher than the available capacity. If overtime is necessary, then extra supervisory and operating costs (step-fixed costs) of 2.50 mEUR will be incurred in the period. The following applies:

Available Capacity II * Overtime Factor = Available Capacity III

3.4.3 Rework

Rework expenditures resulting from defective units arise during the production process. The amount of the necessary rework expenditure depends on the following factors:

INFLUENCING FACTORS	EFFECT ON REWORK
Technology index	Higher technology leads to more rework as a result of the product’s increased complexity.
Environmental index	A higher environmental index leads to more rework due to the higher technical complexity of the machines.
Value analysis index	Intensified value analysis increases expenditures on rework.
Level of non-salary staff costs	Higher non-salary staff costs lead to reduced rework (rejects) as a result of increased staff payment.

Motivation of staff	Highly motivated staff leads to reduced rework.
Utilization Production lines	A utilization of more than 100% (overtime) leads to an excessive use of the production lines and thus to more committee.
Utilization Production staff	A utilization of more than 100% (overtime) leads to increasing production faults and thus to higher rework.

3.4.4 Factory Materials

Per "COPY Classic" manufactured you have to pay factory costs (e.g. energy) of 50.00 EUR. The factory materials are purchased automatically and are always readily available in the required amounts.

3.4.5 Investments in Environmental Technology

Environmental regulators currently use a measure called the “environmental damage indicator” to measure the environmental impact of your company’s production. Your current environmental damage indicator is only average. However, if you choose to, it is possible for you to reduce the overall amount of environmental damage caused by your company.

The ecology index of the production lines themselves can only be improved through either the acquisition of new production lines or through the scrapping of old ones. If the environmental damage indicator drops below the legally required level of 100.0 (Index), then in the current period a penalty charge per missing index point must be paid to the Environmental Authority.

Investments in environmental technology like plants or filters (end-of-pipe-investments) can reduce the amount of environmental damage caused by the company. Any investment in environmental technology will be depreciated over 10 years using the straight-line method.

Based on the current environmental damage indicator, 1.35 mEUR must be paid in period 0.

Environmental index of production lines period 0	**Index**	91.50
Improvement of the index due to environmental technology	**Points**	1.50
Environmental damage indicator for the company period 0	**Index**	93.30
Penalty charge payable to authorities period 0	**mEUR**	1.35

Your company's environmental damage indicator also has a direct influence on the following factors:

- Sales
- Absenteeism and motivation of production staff
- Corporate image
- Share price
- penalty charges

The following penalty charges has been decided by the authorities:

Environmental index of production lines (average)	Penalty charge payable to authorities (MEUR)
85.00	5.00
90.00	2.50
92.50	1.50
95.00	1.00
98.00	0.50
100	0

3.5 HUMAN RESOURCES

3.5.1 Work Force at the Start of the Game

At the beginning of period 0, staff and salary costs at COPYFIX, Inc. are allocated as follows:

COST CENTER	FINAL WORKFORCE	SALARIES (IN EUR) IN PERIOD 0 WITHOUT NON-SALARY STAFF COSTS
Purchasing	18	30,000
Administration	208	28,000
Production	852	30,000
R&D	35	44,000
Sales	100	40,000
TOTAL	**1,213**	

The “Administration” cost center encompasses Human Resources Management, Finance and Accounting and General Administration.

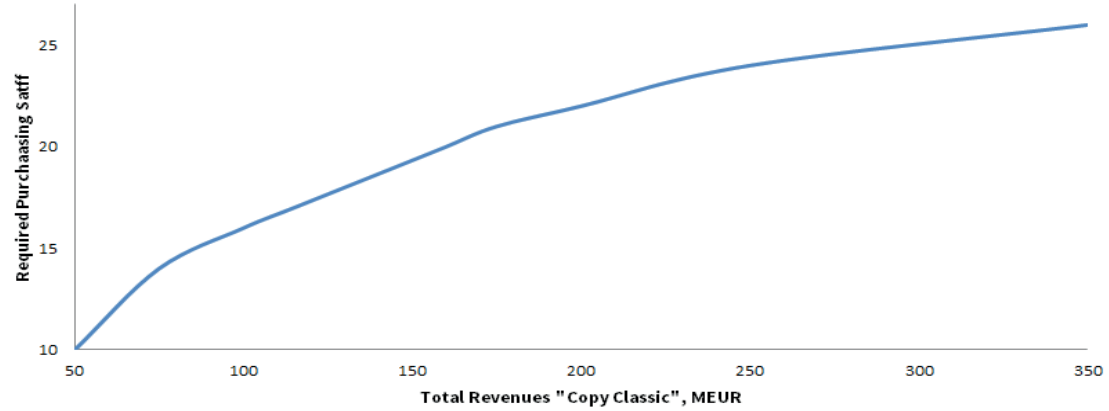
3.5.2 Adjusting the Work Force

Work force adjustment in the simulation is primarily accomplished through employee hiring and dismissal. However, the workforce within the company is also influenced by workers quitting (attrition). The attrition rate is highly dependend of the non-salary staff costs.

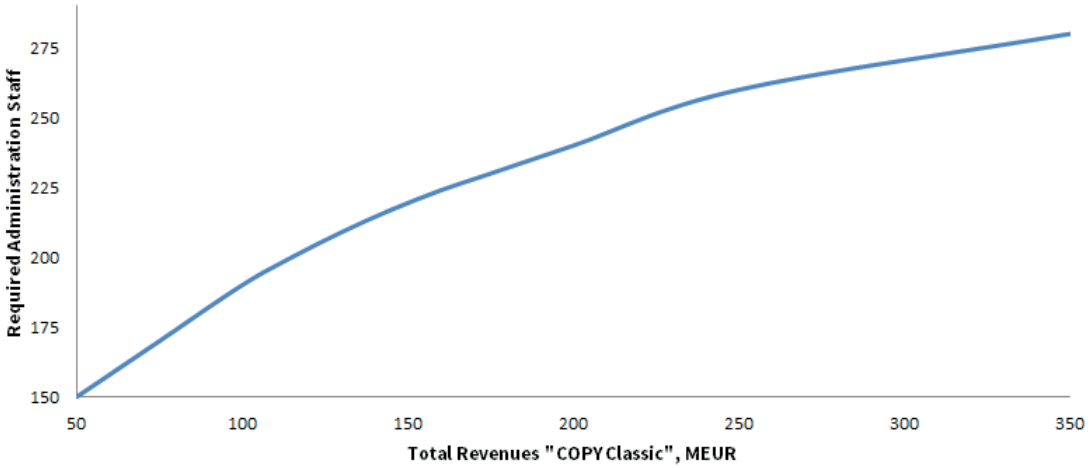
You may recruit and dismiss production staff. In the case of R&D as well as in Sales you simply set a desired final workforce level. The simulation software will automatically hire or dismiss employees as it makes the necessary changes to the workforce (attrition is taken into consideration as well).

The number of employees in the departments of Purchasing and Administration depends on the company's sales revenue. If the sales revenue fluctuates, the number of necessary employees will be adjusted automatically by hiring and dismissing employees.

Cost Center Purchasing: Required Staff Based on Sales Revenue (“COPY Classic”):



Cost Center Administration: Required Staff Based on Sales Revenue (“COPY Classic”):



Additional workers in purchasing are needed when the product complexity is high (high technological index), because the acquisition processes become more complex.

Each time a cost center hires a new employee, it incurs one-time costs of 12,500 EUR. Additionally, each time an employee is removed from a cost center, the company incurs one-time costs of 10,000 EUR. Reshuffles within the departments R&D (from one product to another) and Sales (for example from the domestic to the foreign market) do not represent hires or dismissals. The possible amount of new hires can also be limited by potential shortages in the job market.

3.5.3 Non-Salary Staff Costs

In period 0, non-salary staff costs are equal to 40% of the respective wage and salary totals. A minimum rate of 37 % is legally required and includes things like the employer's contribution to social benefits, paid holidays, etc.

Non-salary staff costs also have a direct influence on the rate of attrition as well as on the employee absenteeism.

3.5.4 Employee Pension Plan

COPYFIX, Inc. has agreed to provide all of their employees with a pension plan. Therefore, in each period, COPYFIX, Inc. must make pension contributions equal to 5% of the total value of wages and salaries.

3.5.5 Additional Dismissal Costs

If more than 10% of the initial workforce of a certain department are dismissed (attrition does not count here), other staffing costs for each additional dismissal in that department. The costs are in addition to the normal dismissal costs (in the participant manual or "Helpcenter", see section "Additional Dismissal Costs" under "Personnel"). The amount of the one-time additional dismissal costs depends on the number of lay-offs. The more workers are dismissed, the higher gets the average compensation for employees. If no further information is communicated to the business news, the following additional dismissal costs apply:

DISMISSALS (IN % OF INITIAL WORKFORCE)	ADDITIONAL COSTS PER DISMISSAL
10% - 19.99%	15,000 EUR
20% - 39.99%	20,000 EUR
40% - 100%	25,000 EUR

The extraordinary expenses for dismissals are presented in the staff report.

3.5.6 Production Staff Motivation

The production staff's level of motivation influences productivity and helps to reduce the amount of rework required. As a psychological factor, the level of staff motivation can be hard to control and sometimes changes very quickly. Motivation has a delayed impact on the productivity and fluctuation of the production staff.

At present the following factors are believed to effect staff motivation:

INFLUENCING FACTORS	CHANGE IN THE INFLUENCING FACTOR	EFFECT ON MOTIVATION
Staff utilization		?
Customer satisfaction		
Change in number of employees (Hires / Dismissals)		?
Non-salary staff costs		
Process optimization		
Training		
Quality of products		

Staff utilization of about 98% is usually beneficial for the company in terms of maintaining or increasing the motivation of the staff. A well-managed growth rate will also positively affect the rate of attrition. Quick growth or personnel reductions will lead to a reduction of motivation. Motivation is measured with an index. A higher / lower index value means a higher / lower level of motivation.

3.5.7 Productivity

3.5.7.1 Base Productivity and Overtime of Production Staff

The normal level of productivity for an employee in production is 50 photocopiers "COPY Classic" per period. Overtime is automatically scheduled when the planned production volume cannot be produced with the available number of staff (or with the available production capacity.) The percentage of possible overtime is limited. Presently the limit is 10%.

If overtime is scheduled, whether caused by insufficient production staff or production lines or both, extra costs of 2.50 mEUR per period are incurred for supervision and operation. Additionally, 25% of wages and salaries are paid to production staff as a result of overtime. These additional premiums are not recorded in the personnel report.

3.5.7.2 Process-Optimation Projects

With the help of process optimization projects the production processes can be rationalized, which leads to increases in the staff productivity. However, such projects can also lead to increases in absenteeism (a consequence to the higher imposition for the workers).

In period 0, the process optimization index is 1.00. Consultants believe that an index of approximately 1.04 can be attained with an investment of 2.50 mEUR

3.5.7.3 Training for Production Staff

Training for production staff improves the skills of employees and leads to increased productivity. Expenditures on training will also increase the staff competence index (period 0 = 1.00) and reduce absenteeism. The average cost for one training day per production worker is about 800 EUR. In line with industry standards, COPYFIX, Inc. currently offers 2-6 training days per year per production worker.

The higher the qualification of the workers, the faster this level decreases if training measurements are completely canceled or strongly reduced.

3.5.7.4 Productivity Index I

On the one hand, the Productivity Index I is directly influenced by training and process optimization. On the other hand, the number of new hires and the corresponding amount of orientation time will usually lead to a decrease in average productivity. Additionally, employee motivation

also has an impact on productivity.

Productivity index I is a function of 4 main factors: the process optimization index, the initial skill orientation index (adaptation index), the staff competence index, and the motivation index.

This information is shown in report 3 (example below):

Process-Optimazition Index	1.0
* Adaption index	1.0
* Staff competence index	1.0
* Motivation index	1.0
= Productivity index I	1,0

3.5.7.5 Productivity Index II

As more units are produced, production workers gain more experience. This results in an increase in productivity. With it, the cumulative amount of produced units is counted over all periods. In other words, production workers are experiencing a learning curve, which is measured by Productivity Index II. The Productivity index is at 1.00 in the starting situation.

3.5.7.6 Actual Productivity

Therefore, the actual productivity of an employee in production is:

Basic Productivity * Productivity Index I * Productivity Index II

Absenteeism

Absenteeism reduces the number of staff that can be utilized in production. The following factors influence the rate of absenteeism:

INFLUENCING FACTORS	MEASURE FOR INFLUENCING FACTOR	EFFECT ON FLUCTUATION
Staff motivation	↗	↘
Staff increase (Hirings)	↗	depending on the amount
Staff cuts (Dismissals)	↗	depending on the amount
Non-salary staff costs	↗	↘
Process optimization	↗	↗
Training	↗	↘
Environmental damage indicator	↗	↘

3.6 FINANCE AND ACCOUNTING

3.6.1 Customer Payment Patterns

The customer payment patterns are:

- 80% of this period's sales are paid directly,
- 20% of this period's sales are paid in the next period.

These payment terms do not pertain to bulk buyers and requests for bids. Those payments are fully received in the period of delivery. Payment amounts to be received in the following period are shown in the current period's balance sheet under "Accounts Receivable".

3.6.2 Loans

In order to ensure the liquidity of the company, you have to decide whether take on a loan. You will learn about interest rates of the different loans in the business news of the respective period. However, your rating influences the actual conditions.

3.6.2.1 Short-Term Loans

Depending on the company's needs, a short-term loan (duration: 1 period) may be taken out in any period. The interest on this loan is paid in the current period with the loan automatically being repaid in the following period. The interest rate charged for short-term loans can also change based on the company's credit rating. The current rating affects (increase or decrease) the interest rates in the following period. The interest rate in period 0 is 8.0 %.

3.6.2.2 Long-Term Loans

You also have the option to replace short-term loans with long-term loans. Long-term loans have a ten-year term. Long-term loans offer a lower interest rate, but can also not be repaid prematurely. Therefore, you won't be able to pay a long-term loan off during the simulation. The interest rate on the loan is fixed at the borrowing time. It can also change based on the company's rating (at the time of borrowing, not during the term). The interest rate in period 0 is 7.0 %.

3.6.2.3 Overdraft Loans

If in a certain period the company cannot cover all of its financial obligations, it will automatically be granted an overdraft loan so that it can avoid insolvency. The company's cash balance must amount to at least 100,000 EUR at all times. An overdraft loan will tie you over until a cash balance of 100,000 EUR is achieved. The interest rate for the overdraft loan is 13.0 % in period 0. The interest is due in the current period. The overdraft loan itself is repaid automatically in the following period.

3.6.3 Financial Investments

In any period, COPYFIX, Inc. can purchase fixed income securities, provided that the company

has surplus liquidity at its disposal. Any interest earned will be credited to you in the current period. The securities themselves are automatically sold and paid for in the following period. The interest rates are communicated in the business news.

3.6.4 Rating

COPYFIX, Inc. is subject to a rating by its bank. A good rating will improve borrowing conditions, while a poor rating will lead to an increase in the interest rate on borrowed capital in the following period. The most important influencing factors on the rating are listed as follows:

INFLUENCING FACTOR	CHANGE IN INFLUENCING FACTOR	EFFECT ON RATING
Equity ratio		
Equity value (absolute)		
Free cash flow/ debt		
Overdraft loans		
Customer satisfaction		
Profit of period		
Planning quality		
Productivity of employees		
Quality of products		

The rating is expressed in form of a creditworthiness category. The current rating of COPYFIX, Inc. is BBB. If the rating changes, the conditions of all credit types change (except for existing long-term loans) in the subsequent period. The different rating classes effect the base rate of the next period as following:

RATING	CHANGE IN INTEREST
AAA	-4.0%
AA	-3.0%
A	-2.0%
BBB	-1.0%
BB	+/- 0%
B	+1.0%
CCC	+2.0%
CC	+3.0%
C	+4.0%
D	+5.0%

3.6.5 Taxation

The company's tax burden is equivalent to 45% of Earning before Taxes (EBT). Possible losses are carried forward and offset with annual net profits before taxes until a positive balance is reached. Taxes are paid in the current period.

3.6.6 Exchange Rate

In later periods, foreign markets are getting attractive for the COPYFIX, Inc. As the products are sold in a different currency unit, the Foreign Currency Unit (FCU), you have to convert your sales prices.

The following example shall help:

EURO → FCU	FCU → EURO
The current exchange ratio is: EUR/FCU = 1.40	The current exchange ratio is: EUR/FCU = 1.40
$\frac{EUR}{FCU} = 1.40$	$\frac{EUR}{FCU} = 1.40$
Now we replace EUR with the sales price in Euro.	Now we replace FCU with the sales price in FCU.
$\frac{3000}{FCU} = 1.40$	$\frac{EUR}{2143} = 1.40$
We convert the equation so we war solving for FCU and calculate the sales price.	We convert the equation so we war solving for EUR and calculate the sales price.
$\frac{3000}{1.40} = FCU = 2143$	1.40 * 2143 = EUR = 3000
The sales price would be 2143 FCU per Unit sold.	The sales price would be 3000 EUR per Unit sold.

3.6.7 Dividend Payments

The amount of the dividend payment of COPYFIX, Inc. is up to you. The maximum payout corresponds to the cumulated profit of the previous period. The value is recorded in report 8, Profit and Loss Statement. The decision has to be set in mEUR. In period 0, a dividend payment of 1.0 mEUR was paid.

The dividend payment has a positive influence on the company’s share price. The higher the payout, the higher the share price. In case you don’t have the necessary liquid assets, your dividend payment will be financed by loans. This will have a negative influence on your rating.

3.6.8 Share Price and Enterprise Value

Each period, a new share price for the company is determined, reflecting the overall value of the company. The number of shares is 500,000. The following factors have an influence on the share price:

INFLUENCING FACTOR	CHANGE IN INFLUENCING FACTOR	EFFECT ON SHARE PRICE
Equity capital for period	↗	↗
Profit for period	↗	↗
Declared dividend for period	↗	↗
Cumulatively declared dividends	↗	↗
Return on sales for period	↗	↗
Awareness of the company	↗	↗
Sales	↗	↗
Planning quality	↗	↗
Ecology index	↗	↗
Customer Satisfaction	↗	↗
Debt-equity ratio	↗	↘
Total product quality	↗	↗

3.6.9 Shareholder Earnings

The shareholders of COPYFIX, Inc. evaluate the value of their shares in terms of how much their shares have contributed towards increasing their personal assets (for example, through dividends paid out or increases in share price). Gains from dividends paid and share price increases are recorded as shareholder earnings in the ratios of the company (report 16: Industry Business Reports).

3.6.10 Business Report on the Industry

Every period, you will receive a statement with the most important figures from your profit and loss accounts. Additionally, you will also receive information on the balance sheets of your competitors. Each of these reports comes free of charge from a business reporting service.

3.6.11 Accounting

COPYFIX, Inc. has a modern accounting department, which was set up to ensure that comparisons within your industry would be possible. The company's managerial accounting department performs the important function of planning and controlling costs through cost type accounting, cost center accounting (departmental costing), and unit-of-output costing. The financial accounting department ensures that the company complies with legal requirements and produces statements that report on the financial situation of the company. With the help of a profit-contribution-margin analysis, the operating results can be calculated.

For analyzing cost center reports the information under 3.6.10.1 and 3.6.10.2 is helpful.

3.6.11.1 Depreciation for Buildings

The depreciation amount per period for buildings is 0.25 mEUR. This depreciation amount is allocated to the cost centers as follows:

PURCHASING	PRODUCTION	R&D	SALES	ADMINISTRATION
5%	70%	5%	5%	15%

3.6.11.2 Maintenance and Other Costs in Administration

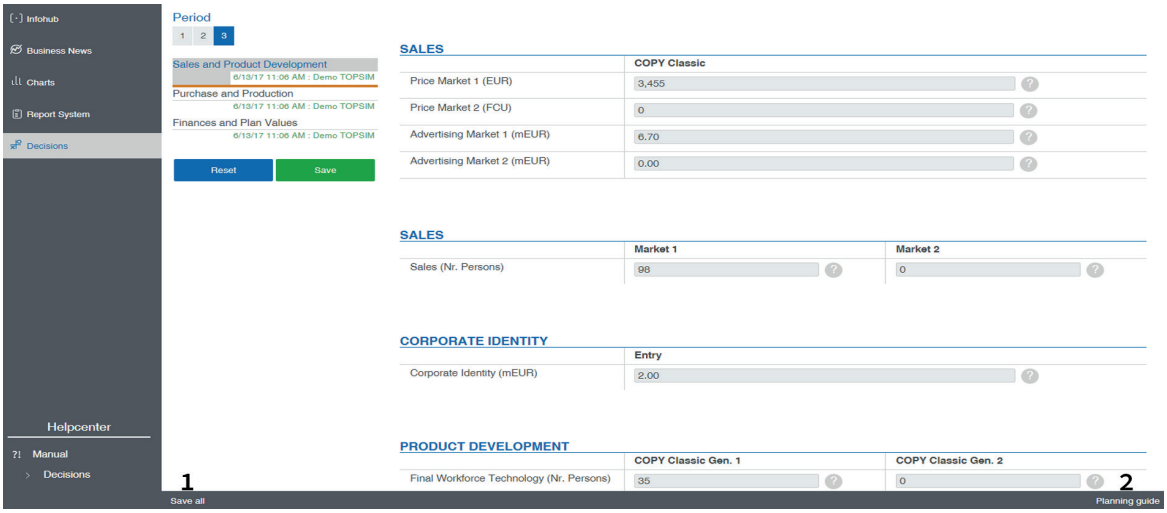
The machinery in the administration department (copy machines, computers etc.) must also be maintained so that they continue to function properly. Fixed maintenance contracts cost 1 mEUR per period.

The wages and salaries from administration are allocated to the “Administration” cost center (as overhead). These costs are then allocated to the products based on their share of revenue.

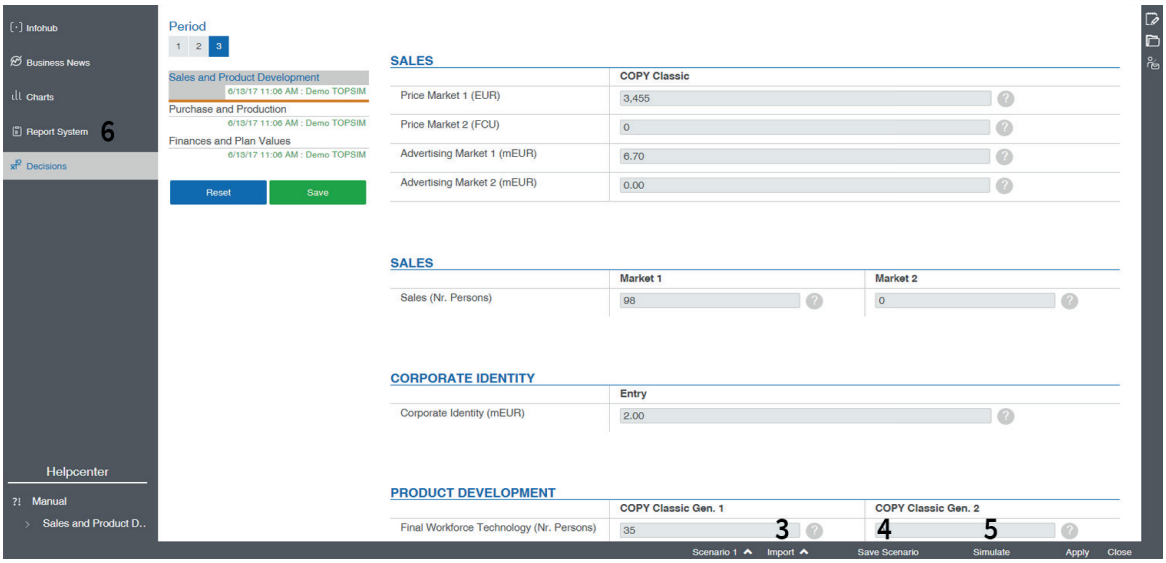
4 PLANNING MODEL

The Planning model is a tool that is available only in certain simulations. This tool can be optionally selected by your instructor. The planning model lets participants simulate the results of the following period on the basis of certain assumptions (for example, assumed sales) for a certain price. Thereby, it helps participants to understand the complexity and connection of different decisions. Every calculation costs 50,000 EUR unless stated otherwise.

This section explains the usage of this planning model within the TOPSIM - Cloud.



1. **First**, save all your decisions prior to opening the planning model. Each decision category on the left-hand side includes information as to if and when the decisions have been saved.
2. **Then**, open the planning model by clicking on the button on the right in the bottom.



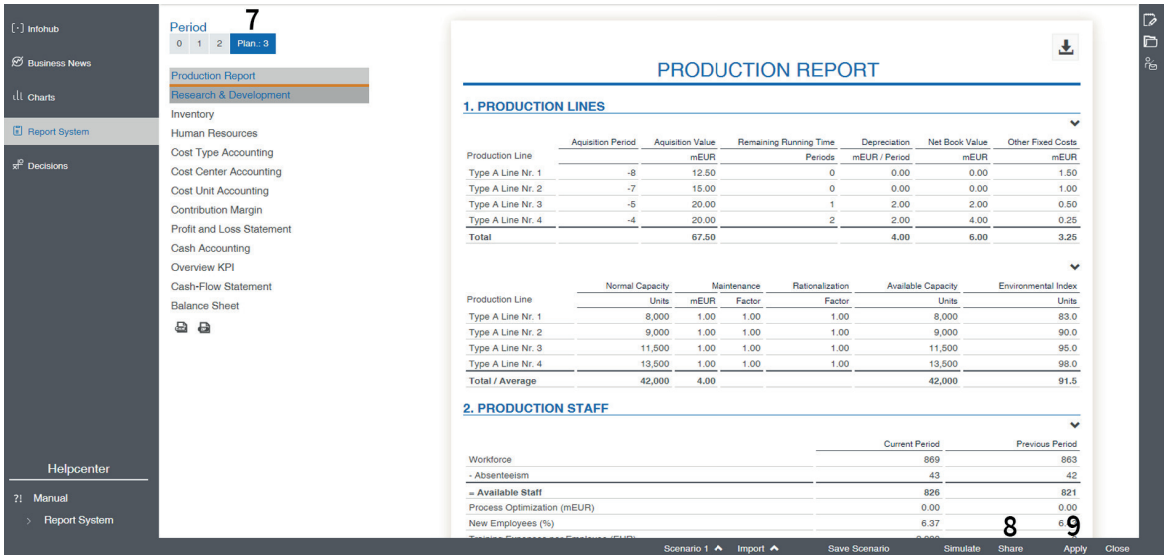
3. **Import**: To import the decisions you made in the game to the planning model, click on "Import" and then on "Import Decisions". After confirming the import, the decisions are imported to scenario 1.

   By clicking on scenario 1, you can switch to a different scenario. Clicking on "Import", you can either import the decisions you made in the game or copy the decisions from a different scenario.

4. **Save Scenario**: You can also make decisions in the planning model. After making your decision, you should save them.

5. **Simulate**: Click "Simulate" afterwards. You will see a decision overview of your saved scenario. Click "Simulate" again and your assumptions will be simulated. Afterwards, the most important KPIs are shown.

6. **Reports**: After closing the KPI-overview, you can open "Reports" on the left-hand side. Here, you can see the reports that have been calculated on the basis of your calculated scenario.

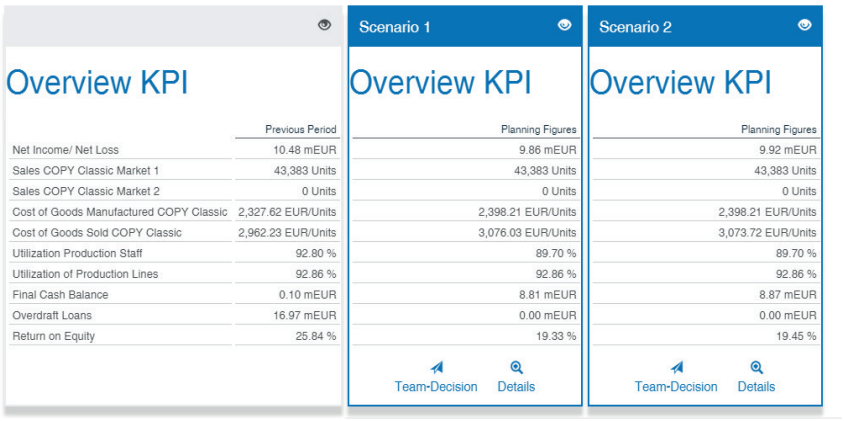


7. This shows the period for which the scenario has been simulated.

8. You can share calculated scenarios with your team mates. To do this, first click on "Share" and then on "Release". Your team mates now can import the decision of this scenario or view the calculated KPIs. By clicking on "Share" again, you can end the release.

9. After clicking "Apply" you will see an overview of all simulated scenarios and their KPIs. To copy the decisions you made in one of these scenarios, press "Team-Decision".

Planningresults



Overview KPI

	Previous Period
Net Income/ Net Loss	10.48 mEUR
Sales COPY Classic Market 1	43,383 Units
Sales COPY Classic Market 2	0 Units
Cost of Goods Manufactured COPY Classic	2,327.62 EUR/Units
Cost of Goods Sold COPY Classic	2,962.23 EUR/Units
Utilization Production Staff	92.80 %
Utilization of Production Lines	92.86 %
Final Cash Balance	0.10 mEUR
Overdraft Loans	16.97 mEUR
Return on Equity	25.84 %

We wish you a lot of fun and good luck with TOPSIM - General Management!

DECISION FORM PERIOD 1

Company ____

Sales

	COPY Classic
	Market 1
Price (per unit)	EUR
Advertising	mEUR
Corporate Identity	mEUR
Market Res. Report	Yes: ☐
Bulk Buyer	units

	Market 1
Sales Staff	no. of ppl.

R&D

	Technology	Ecology	Value analysis
COPY Classic – Gen. 1	no. of ppl.	mEUR	mEUR

Pur-chasing

	COPY Classic
Input Materials/Parts	units

Production

	COPY Classic
Production Volume	units

Production Lines	**Type A**	**Type B**	**Type C**
Investment	no. of new lines	no. of new lines	no. of new lines
Rationalization	mEUR	mEUR	mEUR
Maintenance	mEUR/line	mEUR/line	mEUR/line
Disinvestment	no. of line(s)	no. of line(s)	no. of line(s)

Investment in Environmental Technology	mEUR
Process Optimization	mEUR
Production Staff - hire / dismiss (-)	ppl.
Training	EUR / Employee
Non-Salary Staff Costs	%

Financing

Short-term Loan	mEUR
Long-term Loan	mEUR
Purchase of Securities	mEUR
Dividends	mEUR

Plan Figures

	COPY Classic
	Market 1
Sales	units
Return on Equity	%
Operating Cash-Flow	mEUR

MARKET 1: CLASSIC

	Price	Deviation Price	Technology	Ecology	Advertising	Sales Employees	Customer Satis-faction	Awareness	Sales	Revenue Market	Market Share
	EUR	%	Index	Index	mEUR	Employees	Index	Index	Units	mEUR	%
C1	3,000	0.00	100.00	100.00	6.00	100.00	73.19	53.75	43,000	129.00	20.00
C2	3,000	0.00	100.00	100.00	6.00	100.00	73.19	53.75	43,000	129.00	20.00
C3	3,000	0.00	100.00	100.00	6.00	100.00	73.19	53.75	43,000	129.00	20.00
C4	3,000	0.00	100.00	100.00	6.00	100.00	73.19	53.75	43,000	129.00	20.00
C5	3,000	0.00	100.00	100.00	6.00	100.00	73.19	53.75	43,000	129.00	20.00
Ø / Sum	**3,000**		**100.00**	**100.00**	**6.00**	**100.00**	**73.19**	**53.75**	**215,000**	**645.00**	

OTHER MARKETS

	Bulk Buyer Classic	Requests for Bids Classic
	Units	Offer in EUR
C1	0	0.00
C2	0	0.00
C3	0	0.00
C4	0	0.00
C5	0	0.00

1. Production Lines

	Aquisition Period	Aquisition Value	Remaining Running Time	Depreciation	Net Book Value	Other Fixed Costs	Residual Earnings
		mEUR	Periods	mEUR / Period	mEUR	mEUR	% from Book Value
Type A Line Nr. 1	-8	12.50	1	1.25	1.25	1.50	20.0
Type A Line Nr. 2	-7	15.00	2	1.50	3.00	1.00	20.0
Type A Line Nr. 3	-6	20.00	3	2.00	6.00	0.50	20.0
Type A Line Nr. 4	-5	20.00	4	2.00	8.00	0.25	20.0
Total		**67.50**		**6.75**	**18.25**	**3.25**	

	Normal Capacity	Maintenance		Rationalization	Available Capacity	Environmental Index
	Units	mEUR	Factor	Factor	Units	Index
Type A Line Nr. 1	8,000	1.50	0.97	1.00	7,760	83.0
Type A Line Nr. 2	9,000	1.50	0.97	1.00	8,730	90.0
Type A Line Nr. 3	11,500	1.50	0.97	1.00	11,155	95.0
Type A Line Nr. 4	13,500	1.50	0.97	1.00	13,095	98.0
Total / Average	**42,000**	**6.00**			**40,740**	**91.5**

	Machine Type	Index
Rationalization Index	Type A	1.00
Rationalization Index	Type B	1.00
Rationalization Index	Type C	1.00

2. Production Staff

	Current Period	Previous Period
Workforce	852	853
- Absenteeism	47	-
= Available Staff	**805**	**-**
New Employees (%)	5.86	-
Process Optimization (mEUR)	0.00	0.00
Training Expenses per Employee (EUR)	1,000	-
Staff Motivation (Index)	56.5	50.0
Adaptation Index	1.00	-
× Process Optimization Index	1.00	-
× Staff Qualification Index	1.00	1.00
× Factor Motivation	1.00	-
= Productivity Index I	**1.00**	**-**

	Classic
Cumulated Production up to Previous Period	0
Productivity Index II	**1.00**

	Classic
Basic Productivity (Units / Period)	50.00
× Productivity Index I	1.00
× Productivity Index II	1.00
= Productivity (Units / Period)	**50.02**

3. Utilization Production

STAFF

	Classic	Total
Available Staff (without Overtime)		805
Available Staff (Including Overtime)	885.50	
Productivity (Units / Period)	50.02	
Planned Production Quantity	40,000	
Actual Production Quantity	40,000	
Deployed Staff (Including Overtime)	**799.66**	
Utilization of Staff (%)		**99.3**

PRODUCTION LINES

	Classic	Total
Available Production Capacity (without Overtime)		40,740
Available Production Capacity (Including Overtime)	44,814	
Production Line Capacity Needed per Finished Product	1.00	
Planned Production Quantity	40,000	
Actual Production Quantity	40,000	
Used Production Capacity	**40,000**	
Utilization of Production Lines (%)		**98.2**

4. Environmental Index

Environmental Ratings of Production Lines	(Index)	91.5
Cumulated Investment in Environmental Equipment	(mEUR)	1.50
Improvement of Environmental Ratios	(Points)	1.8
Environmental Damage Indicator for the Company	(Index)	93.3
Environmental Tax	(mEUR)	1.35

TECHNOLOGY

	Investments (mEUR)		Index
	Period	Cumulated	
COPY Classic Gen. 1	1.54	1.54	100.00

ECOLOGY

	Investments (mEUR)		Index
	Period	Cumulated	
COPY Classic Gen. 1	2.50	2.50	100.00

VALUE ANALYSIS

	Investments (mEUR)		Index
	Period	Cumulated	
COPY Classic Gen. 1	1.00	1.00	1.00

INPUT MATERIALS/PARTS COPY CLASSIC

	Quantity		Inventory
	Units	EUR/Units	mEUR
Initial Inventory	25,000	500.00	12.50
+ Quantity from Supplier	30,000	550.00	16.50
+ Express Delivery	0	780.00	0.00
- Quantity Used in Production	40,000	527.27	21.09
= Final Inventory	**15,000**	**527.27**	**7.91**

FINISHED PRODUCTS COPY CLASSIC

	Quantity		Inventory
	Units	EUR/Units	mEUR
Initial Inventory	8,000	2,020.00	16.16
+ Quantity produced	40,000	2,052.23	82.09
- Quantity distributed	43,000	2,046.86	88.02
= Final Inventory	**5,000**	**2,046.86**	**10.23**

STORAGE COSTS

	mEUR
Input Materials/Parts COPY Classic	0.75
Finished Products COPY Classic	0.50
Total	**1.25**

	Purchasing	Administration	Production	R&D	Sales	Total
Initial Workforce	18	200	853	34	100	1,205
+ Hires	1	16	50	2	9	78
- Dismissals	0	0	0	0	0	0
- Attrition	1	8	51	1	9	70
= Final Workforce	**18**	**208**	**852**	**35**	**100**	**1,213**
Wages/Salaries (mEUR) (*)	0.54	5.82	25.56	1.54	4.00	37.46
Recruitment/Dismissals/Training (mEUR)	0.01	0.20	1.48	0.03	0.11	1.83
Non-Salary Staff Costs (mEUR) (*)	0.22	2.33	10.22	0.62	1.60	14.99
Pension Reserves (mEUR) (*)	0.03	0.29	1.28	0.08	0.20	1.87
Total Staffing Costs (mEUR)	**0.80**	**8.64**	**38.54**	**2.26**	**5.91**	**56.15**
Additional Dismissal Costs (mEUR)	0.00	0.00	0.00	0.00	0.00	0.00
Training (Production) (mEUR)			0.85			
Non-Salary Staff Costs in % of Salaries						40.00
(*) Without Overtime Costs						

	Total	Overhead	Direct Costs
			Classic
Material Costs			
Input Materials / Parts	21.09	0.00	21.09
Factory Materials	2.00	0.00	2.00
Staffing Costs			
Wages / Salaries (*)	37.46	13.47	23.99
Recruitment / Dismissals / Training	1.83	1.83	0.00
Additional Dismissal Costs	0.00	0.00	0.00
Non-Salary Staff Costs	14.99	5.39	9.60
Pension Reserves	1.87	0.67	1.20
Depreciation			
Buildings	0.25	0.25	0.00
Production Lines	6.75	6.75	0.00
Environ. Techn.	0.15	0.15	0.00
Finished Products	0.00	0.00	0.00
Other Costs			
Other Fixed Costs	3.25	3.25	0.00
Maintenance / Rationalization	7.00	7.00	0.00
Process Optimization	0.00	0.00	0.00
Environmental Tax	1.35	1.35	0.00
Rework / Scrap	1.23	0.00	1.23
Storage Costs	1.25	1.25	0.00
Advertising / Market Research / CI	8.10	2.10	6.00
Other Costs R&D	3.50	0.00	3.50
Transport Costs	1.08	0.00	1.08
Total	**113.14**	**43.46**	**69.68**
(*) with Overtime Costs			

	Total	Purchasing	Production	R&D	Sales	Administration
Material Costs						
Input Materials / Parts	0.00	0.00	0.00	0.00	0.00	0.00
Factory Materials	0.00	0.00	0.00	0.00	0.00	0.00
Staffing Costs						
Wages / Salaries (*)	13.47	0.54	1.57	1.54	4.00	5.82
Recruitment / Dismissals / Training	1.83	0.01	1.48	0.03	0.11	0.20
Additional Dismissal Costs	0.00	0.00	0.00	0.00	0.00	0.00
Non-Salary Staff Costs	5.39	0.22	0.63	0.62	1.60	2.33
Pension Reserves	0.67	0.03	0.08	0.08	0.20	0.29
Depreciation						
Buildings	0.25	0.01	0.18	0.01	0.01	0.04
Production Lines	6.75	0.00	6.75	0.00	0.00	0.00
Environ. Techn.	0.15	0.00	0.15	0.00	0.00	0.00
Finished Products	0.00	0.00	0.00	0.00	0.00	0.00
Other Costs						
Other Fixed Costs	3.25	0.00	3.25	0.00	0.00	0.00
Maintenance / Rationalization	7.00	0.00	6.00	0.00	0.00	1.00
Process Optimization	0.00	0.00	0.00	0.00	0.00	0.00
Environmental Tax	1.35	0.00	1.35	0.00	0.00	0.00
Rework / Scrap	0.00	0.00	0.00	0.00	0.00	0.00
Storage Costs	1.25	0.75	0.00	0.00	0.50	0.00
Advertising / Market Research / CI	2.10	0.00	0.00	0.00	2.10	0.00
Other Costs R&D	0.00	0.00	0.00	0.00	0.00	0.00
Transport Costs	0.00	0.00	0.00	0.00	0.00	0.00
Total Costs	**43.46**	**1.56**	**21.43**	**2.27**	**8.53**	**9.68**
(*) with Overtime Costs						

TOTAL (MEUR)

Cost Center	Allocation	Total	Classic
+ Purchasing	Direct Costs	23.09	23.09
+ Purchasing	Overhead	1.56	1.56
+ Production	Direct Costs	36.01	36.01
+ Production	Overhead	21.43	21.43
= Cost of Goods Manufactured		**82.09**	**82.09**
+/- Increase/Decrease in Finished Goods Inventory		5.93	5.93
= Cost of Sales		**88.02**	**88.02**
+ R&D	Direct Costs	3.50	3.50
+ R&D	Overhead	2.27	2.27
+ Sales	Direct Costs	7.08	7.08
+ Sales	Overhead	8.53	8.53
+ Administration	Direct Costs	0.00	0.00
+ Administration	Overhead	9.68	9.68
= Cost of Goods Sold		**119.07**	**119.07**

PER UNIT (EUR)

Cost Center	Allocation	Classic
+ Purchasing	Direct Costs	577.27
+ Purchasing	Overhead	38.95
+ Production	Direct Costs	900.37
+ Production	Overhead	535.64
= Cost of Goods Manufactured (*)		**2,052.23**
= Cost of Sales (**)		**2,046.86**
+ R&D	Direct Costs	81.40
+ R&D	Overhead	52.80
+ Sales	Direct Costs	164.53
+ Sales	Overhead	198.26
+ Administration	Direct Costs	0.00
+ Administration	Overhead	225.17
= Cost of Goods Sold (**)		**2,769.02**

(*) The Cost of Goods Manufactured is set in proportion to the quantity produced.

(**) The Cost of Sales is set in proportion to the quantity sold.

COPY CLASSIC - CONTRIBUTION MARGIN TOTAL (MEUR)

		Market 1	Bulk Buyer	Requests for Bids	Market 2	Special Market	Total
	Sales Revenue	129.00	0.00	0.00	0.00	0.00	129.00
-	Direct Material Costs	24.75	0.00	0.00	0.00	0.00	24.75
-	Direct Production Costs	38.61	0.00	0.00	0.00	0.00	38.61
-	Transport Costs	1.08	0.00	0.00	0.00	0.00	1.08
=	**Contribution Margin I**	**64.57**	**0.00**	**0.00**	**0.00**	**0.00**	**64.57**
-	Fixed Material Costs	1.67	0.00	0.00	0.00	0.00	1.67
-	Fixed Production Costs	22.99	0.00	0.00	0.00	0.00	22.99
=	**Contribution Margin II**	**39.91**	**0.00**	**0.00**	**0.00**	**0.00**	**39.91**
-	Advertising Costs	6.00	0.00	0.00	0.00	0.00	6.00
=	**Contribution Margin III**	**33.91**	**0.00**	**0.00**	**0.00**	**0.00**	**33.91**
-	Development Costs	3.50	0.00	0.00	0.00	0.00	3.50
=	**Contribution Margin IV**	**30.41**	**0.00**	**0.00**	**0.00**	**0.00**	**30.41**
-	Research Costs						2.27
-	Sales Costs						8.53
-	Administration Costs						9.68
=	**Contribution Margin V**						**9.93**

COPY CLASSIC - CONTRIBUTION MARGIN ACCOUNTING PER UNIT (EUR)

		Market 1	Bulk Buyer	Requests for Bids	Market 2	Special Market	ø-Value
	Price	3,000.00	0.00	0.00	0.00	0.00	3,000.00
-	Direct Material Costs	575.56	0.00	0.00	0.00	0.00	575.56
-	Direct Production Costs	897.81	0.00	0.00	0.00	0.00	897.81
-	Transport Costs	25.00	0.00	0.00	0.00	0.00	25.00
=	**Contribution Margin I**	**1,501.63**	**0.00**	**0.00**	**0.00**	**0.00**	**1,501.63**
-	Fixed Material Costs	38.79	0.00	0.00	0.00	0.00	38.79
-	Fixed Production Costs	534.70	0.00	0.00	0.00	0.00	534.70
=	**Contribution Margin II**	**928.14**	**0.00**	**0.00**	**0.00**	**0.00**	**928.14**
-	Advertising Costs	139.53	0.00	0.00	0.00	0.00	139.53
=	**Contribution Margin III**	**788.60**	**0.00**	**0.00**	**0.00**	**0.00**	**788.60**
-	Development Costs	81.40	0.00	0.00	0.00	0.00	81.40
=	**Contribution Margin IV**	**707.21**	**0.00**	**0.00**	**0.00**	**0.00**	**707.21**
-	Research Costs						52.80
-	Sales Costs						198.26
-	Administration Costs						225.17
=	**Contribution Margin V**						**230.98**

Total Cost Accounting			Cost of Sales Accounting	
	mEUR			mEUR
Sales Revenue	129.00		Sales Revenue	129.00
+ Other Income	0.00		+ Other Income	0.00
+ Increase / Decrease of the Stock of Finished Products	-5.93		- Cost of Goods Sold	88.02
- Material Expenses	23.09		- R&D	5.77
- Personnel Costs	-		- Sales	15.60
- Wages / Salaries	37.46		- Administration	9.68
- Hires / Dismissals	0.98		- Other Expenses	0.00
- Pension Reserves	1.87			
- Other Staffing Costs	15.84			
- Depreciation	7.15			
- Other Expenses	26.75			
= Operating Income	**9.93**		**= Operating Income**	**9.93**

Net Income/ Net Loss

	mEUR
+ Investment Income	0.00
- Interests for Short- and Long-term Loans	2.16
- Interests for Overdraft Loan	0.00
= Financial Result	**-2.16**
= Earnings before Tax	**7.77**
- Income Tax	3.50
= Net Income/ Net Loss	**4.27**

Appropriation of Net Income

	mEUR
Income/Loss carried forward	3.00
- Dividend Payment Current Period	1.00
= Cumulated Incomes/Losses brought forward	**2.00**
+ Net Income/ Net Loss	4.27
= Income/Loss carried forward	**6.27**

	mEUR
Initial Cash Balance	0.50

CASH INFLOWS

	mEUR
Cash Inflows from Sales Current Period	103.20
Cash Inflows from Sales Previous Period	17.84
Sale of Securities	0.00
Interest Income	0.00
Other Income / Capital Increase	0.00
Disinvestment of Production Lines	0.00
Short-Term and Long-Term Loans	27.00
Special Market Proceeds	0.00
Overdraft Loans	0.00
Total Cash Inflows	**148.04**

CASH OUTFLOWS

	mEUR
Purchase: Input / Operating Materials, Finished Products	18.50
Subcontracting	0.00
Personnel Costs (without pension reserves)	54.28
Other Expenses	26.75
Short-Term & Overdraft Loan Repayment	40.00
Interest Costs Short-Term & Long-Term Loans	2.16
Purchase of Production Lines	0.00
Purchase of Securities	0.00
Purchase of Environmental Equipment	1.50
Dividend Payment	1.00
Charge-Off	0.00
Income Tax	3.50
Interest Payment for Overdraft Loans	0.00
Total Cash Outflows	**147.69**

Final Cash Balance	**0.85**

Payment Conditions

	% in the actual period
Customers Products (Cash Inflows)	80.0
Supplier Input Materials COPY Classic (Cash Outflows)	100.0

	mEUR
Net Income/ Net Loss	4.27
+ Depreciation on Fixed Assets	7.15
+ Increase in Pension Reserves	1.87
Traditional Cash-Flow	**13.30**
+ Increase (-) / Reduction (+) Inventories of Materials	4.59
+ Increase (-) / Reduction (+) Inventories of Finished Products	5.93
+ Increase (-) / Reduction (+) Inventories of Accounts Receivable	-7.96
A. Operating Cash-Flow	**15.85**
+ Investments in Production Lines	-1.50
B. Cash-Flow from Investment Activities	**-1.50**
+ Capital Increases	0.00
+ Payment Dividends from Prev. Period	-1.00
+ Increase (-) / Reduction (+) of Securities	0.00
+ Increase (+) / Reduction (-) of Bank Liabilities	-13.00
C. Cash-Flow from Financing Activities	**-14.00**
D. Change in Cash Position (A+B+C)	**0.35**
Free Cash-Flow (A+B)	14.35

Assets (mEUR)				Liabilities (mEUR)		
	Current Period	Previous Period			Current Period	Previous Period
Fixed Assets	27.35	33.00		Equity	31.27	28.00
Property and Buildings	7.75	8.00		Share Capital	15.00	15.00
Machines and Production Facilities	19.60	25.00		Capital Reserves	2.50	2.50
Current Assets	44.80	47.00		Retained Earnings	7.50	7.50
Input Materials	7.91	12.50		Profit / Loss Carried Forward	2.00	0.00
Finished Products	10.23	16.16		Net Income / Loss	4.27	3.00
Trade Receivables	25.80	17.84		Pension Reserves	13.87	12.00
Securities	0.00	0.00		Pension Reserves	13.87	12.00
Cash Balance	0.85	0.50		Liabilities	27.00	40.00
				Long-term Loans > 5 Periods	0.00	0.00
				Short-Term Loans < 1 Period	27.00	40.00
				Overdraft Loans	0.00	0.00
Balance Sheet Total	**72.15**	**80.00**		**Balance Sheet Total**	**72.15**	**80.00**

PROFIT AND LOSS STATEMENT (MEUR)

	C1	C2	C3	C4	C5
Sales Revenue	129.00	129.00	129.00	129.00	129.00
+ Other Income	0.00	0.00	0.00	0.00	0.00
- Cost of Goods Sold	88.02	88.02	88.02	88.02	88.02
- R&D Costs	5.77	5.77	5.77	5.77	5.77
- Sales Costs	15.60	15.60	15.60	15.60	15.60
- Administration Costs	9.68	9.68	9.68	9.68	9.68
- Other Expenses	0.00	0.00	0.00	0.00	0.00
= Operating Income	**9.93**	**9.93**	**9.93**	**9.93**	**9.93**
+ Financial Result	-2.16	-2.16	-2.16	-2.16	-2.16
= Earnings before Tax	7.77	7.77	7.77	7.77	7.77
- Income Tax	3.50	3.50	3.50	3.50	3.50
= Net Income/ Net Loss	**4.27**	**4.27**	**4.27**	**4.27**	**4.27**

BALANCE SHEET (MEUR)

Assets	C1	C2	C3	C4	C5
Fixed Assets	27.35	27.35	27.35	27.35	27.35
Property and Buildings	7.75	7.75	7.75	7.75	7.75
Machines and Production Facilities	19.60	19.60	19.60	19.60	19.60
Current Assets	44.80	44.80	44.80	44.80	44.80
Input Materials	7.91	7.91	7.91	7.91	7.91
Finished Products	10.23	10.23	10.23	10.23	10.23
Trade Receivables	25.80	25.80	25.80	25.80	25.80
Securities	0.00	0.00	0.00	0.00	0.00
Cash Balance	0.85	0.85	0.85	0.85	0.85
Balance Sheet Total	**72.15**	**72.15**	**72.15**	**72.15**	**72.15**
Liabilities	C1	C2	C3	C4	C5
Equity	31.27	31.27	31.27	31.27	31.27
Share Capital	15.00	15.00	15.00	15.00	15.00
Capital Reserves	2.50	2.50	2.50	2.50	2.50
Retained Earnings	7.50	7.50	7.50	7.50	7.50
Profit / Loss Carried Forward	2.00	2.00	2.00	2.00	2.00
Net Income / Loss	4.27	4.27	4.27	4.27	4.27
Pension Reserves	13.87	13.87	13.87	13.87	13.87
Pension Reserves	13.87	13.87	13.87	13.87	13.87
Liabilities	27.00	27.00	27.00	27.00	27.00
Long-term Loans > 5 Periods	0.00	0.00	0.00	0.00	0.00
Short-Term Loans < 1 Period	27.00	27.00	27.00	27.00	27.00
Overdraft Loans	0.00	0.00	0.00	0.00	0.00
Balance Sheet Total	**72.15**	**72.15**	**72.15**	**72.15**	**72.15**

KEY FIGURES

	C1	C2	C3	C4	C5
Share Price, EUR	196.91	196.91	196.91	196.91	196.91
Rating Level	BBB	BBB	BBB	BBB	BBB

Weighted Average Cost of Capital (WACC)	%	6.9
Net Operating Profit after Tax (NOPAT)	mEUR	5.46
Traditional Cash-Flow (CF)	mEUR	13.30
Net Capital Employed (NCE)	mEUR	72.15
Return on Net Capital Employed (NOPAT / NCE)	%	7.6
Economic Value Added (EVA = NOPAT - WACC * NCE)	mEUR	0.45
EVA (Period - Previous Period)	mEUR	0.00
Cash-Flow Return on Investment (CF / NCE)	%	18.4
Difference Total Cash-Flow (DCTF = CF - j% * NCE) (*)	mEUR	3.92
Delta Difference Total Cash-Flow (DTCF = DCTF Period - DCTF Previous Period)	mEUR	0.00
Market Value Added (Value of Company - Equity)	mEUR	67.18
EBIT	mEUR	9.93
EBITDA	mEUR	17.08
EBITDA-Margin (EBITDA / Revenue)	%	13.2
Free Cash-Flow	mEUR	14.35
(*) j% = Average Interest Rate for CFROI		

SALES

			P 0
Price Market 1	Classic	EUR	3,000
Advertising Market 1	Classic	mEUR	6.00
Sales Final Workforce	Market 1	Number	100
Corporate Identity		mEUR	2.00

PRODUCT DEVELOPMENT

			P 0
Technology Final Workforce	Classic Gen. 1	Number	35
Ecology	Classic Gen. 1	mEUR	2.50
Value Analysis	Classic Gen. 1	mEUR	1.00

BULK BUYER AND REQUESTS FOR BIDS

			P 0
Bulk Buyer	Classic	Units	0
Requests for Bids	Classic	EUR/Unit	0.00

MARKET RESEARCH

			P 0
Market Research Report			Yes

PURCHASE AND PRODUCTION

			P 0
Input Materials/Parts	Classic	Units	30,000
Production Volume	Classic	Units	40,000

PRODUCTION LINES

			P 0
Investment (No. of New Lines)	Type A		0
Investment (No. of New Lines)	Type B		0
Investment (No. of New Lines)	Type C		0
Disinvestment		Line No.	
Maintenance per Production Line	Type A	mEUR	1.50
Maintenance per Production Line	Type B	mEUR	0.00
Maintenance per Production Line	Type C	mEUR	0.00
Budget Rationalization	Type A	mEUR	0.00
Budget Rationalization	Type B	mEUR	0.00
Budget Rationalization	Type C	mEUR	0.00

ENVIRONMENTAL PARTS AND PERSONNEL

			P 0
Investment in Environmental Parts		mEUR	1.50
Process Optimization		mEUR	0.00
Production Staff		Hires/Dismiss.	50
Training per Employee		EUR	1,000.00
Non-Salary Staff Costs		%	40.00

FINANCE

			P 0
Short-term Loans		mEUR	27.00
Long-term Loans		mEUR	0.00
Purchase of Securities		mEUR	0.00
Dividends absolute		mEUR	1.00

PLANNING FIGURES

			P 0
Planned Sales Classic	Market 1	Units	43,000
Planned Return on Equity		%	16.00
Planned Operating Cash-Flow		mEUR	16.00