



Introduction
Case "Modern bikes Ltd"

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Welcome to RealGame training and to the Management Team of Modern bikes Ltd!

Welcome to the RealGame simulation game training. We are looking forward to an opportunity to learn by doing in a nice and efficient way. RealGame training is especially powerful in illustrating the dynamics and the holistic structure of a business organization – issues that many of us encounter in our work, but which are difficult to illustrate by traditional business training.

With this simulation introduction and pre-assignment you can make yourself familiar with the basics of RealGame simulation and your game company – Modern bikes Ltd.

ACQUAINT YOURSELF WITH THE INTRODUCTION AND ANSWER THE QUESTIONS ON THE LAST PAGES OF THIS INTRODUCTION. The assignments require simple calculations which will help you to understand the basic relationships in the simulation supply chain. Also before we meet **YOU COULD PONDER ABOUT THE FUTURE STRATEGY OF YOUR COMPANY.** For this use the form in the end of this introduction.

During the simulation game, your task as a group (as a company) is first and foremost to:

- be **cost-efficient**
- plan your production on demand forecasts (to be **demand-driven**)
- balance the whole **supply chain**
- add value to your customers (**value up**)
- tune up your cost-efficiency (**costs down**)

Modern Bikes simulation is also about winning the other participating groups. The criteria for determining the winner are (both measuring up to 50% of the criteria):

- financial key figures from your operations (sales, result, result on sales)
- Your strategy work before and during the simulation (overall strategy presentation, strategy's clarity and convincibility, strategy execution)

This module binds together several different business disciplines. For example, financial themes are an essential part of the exercise, you will have to consider CRM issues in your sales and marketing operations, and within your teams you are constantly facing communication and leadership issues. In other words, this module combines and links together many of the themes that are relevant in other learning sessions and delivers a holistic view on running a business. During the simulation you need to optimize the whole business and not just some tasks or functions within it.

During the game it is recommended that **each team has a laptop**. Bring also with you good sportmanship, team spirit and will to succeed!

Looking forward to meeting you soon,

Timo Lainema

Modern bikes Ltd

You have been chosen to steer Modern bikes Ltd. Your decisions on purchasing, manufacturing, sales, marketing, product development, finance and strategy will determine the success or failure of Modern bikes. Your competitors will try to maximize their profits as well.

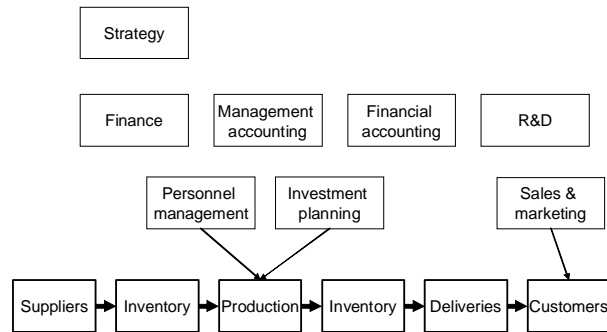


Figure: The business functions in Modern bikes Ltd

Modern bikes Ltd is a Finnish company manufacturing high tech bikes for the global market. Modern bikes Ltd was established in the 1960s as a repair shop for bikes. During the 1980s the company experienced a dramatic change in its operations and started developing and manufacturing its own bikes. Their bikes were commercially viable and they faced a big break. The company experienced huge demand for its fashionable bikes and turnover sky-rocketed. As a result of this success, the company developed a mountain bike product series in the 1990s.

During the autumn of 2008, due to severe competition which eroded profitability significantly, the company decided to seek ways to recreate the growth curve from the previous decade, to increase efficiency and thus increase profitability and therefore shareholder value. At the moment Modern bikes has some 5-6 serious competitors. During the past years the growth of the company has led to uncontrolled supply chain management and unbalanced capacity. It is now apparent to management that a new look has to be taken at the sourcing, the inventory management, manufacturing and delivery process. Thus, there is a need to balance the internal processes in order to succeed in the primary task. In the future the company has to:

- be **cost-efficient**
- plan its production on demand forecasts (to be **demand-driven**)
- balance the whole **supply chain**
- add value to its customers (**value up**)
- tune up its cost-efficiency (**costs down**)

Your team has been brought in to achieve these goals!



Figure: Modern bikes' extremely innovative Mountain bike

The simulation environment

RealGame simulation is continuously operated. It means that the operations in the simulation company are triggered hour by hour, in one hour steps. The simulation runs 24 hours per day. There are 7 days a week and all the week days are equal regarding, for example, the market demand. There are 28-31 days per month, as in the real world calendar. If you need to, you can run your company's production in three shifts (night, morning, evening; each 8 hours long).

Operational Environment

Modern bikes product portfolio

The production and distribution functions of Modern bikes Ltd are located outside of Finland. The company currently has two end products: a traditional **Road bike** and a **Mountain bike**. Your Research and Development department are waiting for a permission to start working on a new **Hometrainer** product which the customers seem to be eagerly waiting for.

Procurement

Your production line requires frequent raw material purchases. You have several suppliers for each of the raw materials. These different suppliers have different prices, delivery times and terms of payment. When you place a raw material order to a supplier, the supplier will automatically send the ordered raw material. The table below shows the raw material suppliers with different raw material delivery terms:

| Supplier | Raw material | Price | Delivery time (days) | Term of payment (days) | Min order (units) |
|-------------------------|--------------|----------|----------------------|------------------------|-------------------|
| Stockton Ltd | Wheel | 12,00 | 7 | 7 | 3.000 |
| Allied Wheels Ltd | Wheel | 20,00 | 2 | 21 | 2.000 |
| Stockton Ltd | Wheel | 30,00 | 10 h | 14 | 1.000 |
| Training Industries LTD | Frame | 70,00 | 7 | 7 | |
| Y2K Compliance Ltd | Frame | 85,00 | 3 | 21 | |
| Y2K Compliance Ltd | Frame | 110,00 | 1 | 14 | |
| Training Industries LTD | Gears | 70,00 | 14 | 3 | |
| Training Industries LTD | Gears | 77,00 | 7 | 7 | |
| Gearing and such Ltd | Gears | 90,00 | 3 | 21 | |
| NY Electrobites Ltd. | Components | 14,00 | 7 | 7 | 4.500 |
| Training Industries LTD | Components | 22,00 | 3 | 21 | 3.000 |
| Ntel Memory | Components | 33,00 | 18 h | 14 | 1.500 |
| Ntel Memory | Electronics | 800,00 | 14 | 5 | |
| Ntel Memory | Electronics | 1 000,00 | 7 | 7 | |
| Tosgiba Memory | Electronics | 1 200,00 | 3 | 14 | |

Inventory

The raw materials purchased from a raw material supplier will be placed in the inventory. The inventory is an on-line inventory (inventory values are updated in real-time). The inventory value should be as low as possible to ensure that scarce capital is not unnecessarily tied up in materials (the example below is not a particularly good example of effective inventory management – see the huge Road bike and Wheels inventory).

| Item | Amount | Average prod. cost | Ordered | Type | AllowedStore | Fine/Unit/Day | Waste-%/Day |
|---------------|--------|--------------------|---------|------|--------------|---------------|-------------|
| Mountain bike | 180 | 623,91 | | F | 400 | | 5 |
| Road bike | 1 374 | 428,84 | | F | 400 | | 5 |
| Components | 2 | 22,00 | 4 000 | R | | | 1 |
| Electronics | 0 | 0,00 | | R | | | 1 |
| Frame | 16 | 85,00 | 800 | R | | | 1 |
| Gears | 20 | 89,92 | 800 | R | | | 1 |
| Wheel | 3 425 | 17,77 | 0 | R | | | 1 |
| Body | 296 | 235,85 | | S | | | 1 |
| Supplies | 1 | 97,95 | | S | | | 1 |

R = raw material; S = semi finished; F = finished; W = Waste; D = Under development

Production

The manufacturing consists of three production cells. Production decisions include: selecting during which shifts the cells will be working (morning, evening, night), investing in machine capacity, and hiring workers. An important part of the production process is to change the assembly phase production between the Road bike and the Mountain bike (same machinery is used for both products, but **only one can be produced at a time**). Note, that each time you change the production in assembly, a 4 hour set-up is run during which no products are produced.

Semi finished

Body

1 Body =
2,0 Wheel + 1,00 Frame +
1,00 Gears

00 08 16 24

Last produced (per hour):
| 46 | 46 | 46 | 48 | 48 ->

Assembly

Road bike

1 Road bike =
1,00 Body + 1,00 Supplies

00 08 16 24

Last produced (per hour):
| 38 | 40 | 39 | 39 ->

Road bike Mountain bike

Supplies

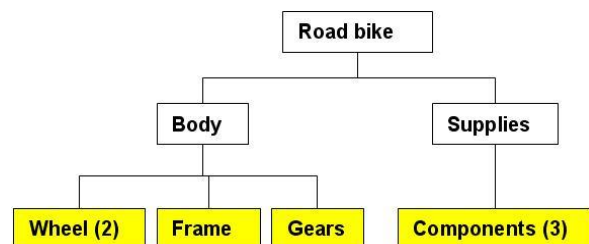
1 Supplies =
3,0 Components

00 08 16 24

Last produced (per hour):
| 4 | 65 | 61 | 62 | 63 | 64 | 61 | 62 | 65 | 65 ->

The finished goods from production will be placed in the inventory where from they are to be delivered to the customers.

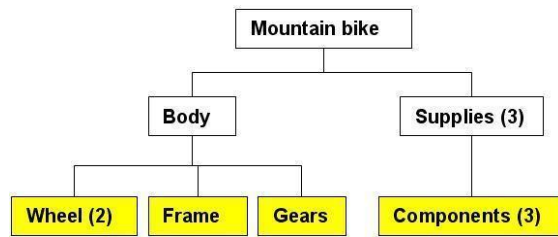
The bill of materials (BoM) of the Road bike is shown on the right. To produce 1 Road bike requires 1 Body + 1 set of Supplies. In the sub-assembly, to produce 1 Body requires 2 Wheels + 1 Frame + 1 set of Gears. To produce 1 set of Supplies requires 3 sets of Components. Altogether, to produce **one Road bike** requires:



- 2 Wheels
- 1 Frame
- 1 set of Gears
- 3 sets of Components

On the right, the BoM for the Mountain bike. Note the demand for Supplies. Altogether, to produce **one Mountain bike** requires the following raw materials:

- 2 Wheels
- 1 Frame
- 1 set of Gears
- 9 sets of Components



The production cell capacities are the following:

| Production Cell | Capacity per hour | Capacity per shift | Capacity per day |
|---------------------------------|-------------------|--------------------|------------------|
| Body | 48 units | 384 units | 1.152 units |
| Supplies | 64 units | 512 units | 1.536 units |
| Bikes (road or mountain) | 40 units | 320 units | 960 units |

Capacity per day can be achieved by using all the three shifts. The above capacity values are theoretical and they are seldom achieved. Note, that there are production shift extra salaries when using evening and night shifts. The production costs of producing a Road bike is roughly 400 €/unit and 700 €/Mountain bike. After the variable production costs you also need to pay fixed costs which are roughly 50% of the amount of production costs.

Offers

The customers make purchase decisions based on your offers. The figure below shows the terms in sales offers. Note, that you can create several offers for one market area. In the example below the company is willing to sell smaller lots (1-50 units) to AME if the customer agrees to pay 50 euros extra per bike. The customers are also promised a slightly faster delivery when they order a smaller lot. You can also try to make the customers pay faster by promising a faster delivery, or any other combination available through changing the sales terms.

| Market area | Price | Min | Max | TermOfPayment(d) | PromisedDelivery(h) |
|-------------|-------|-----|-----|------------------|---------------------|
| AME | 750 | 1 | 50 | 14 | 80 |
| AME | 700 | 21 | 100 | 14 | 90 |
| EMEA | 750 | 1 | 50 | 14 | 80 |
| EMEA | 700 | 21 | 100 | 14 | 90 |
| SAP & NEA | 800 | 1 | 50 | 14 | 300 |
| SAP & NEA | 750 | 21 | 100 | 14 | 320 |

Besides of the offer terms also the quality of our products, the money invested in advertising and our historical delivery certainty affect the sales.

Incoming Orders and Delivering

If a customer values our offering to be good enough, it will send us an order. You as the decision-maker need to deliver the incoming orders. In deliveries you have the following delivery methods available.

| Markkina | Delivery by | Duration (h) | Cost per delivery | Cost per unit |
|-----------|-----------------|--------------|-------------------|---------------|
| EMEA | Air freight | 48 | 60 | 20 |
| EMEA | Courier Service | 12 | 80 | 30 |
| EMEA | Standard | 72 | 100 | 8 |
| AME | Standard | 120 | 200 | 40 |
| AME | Air freight | 48 | 100 | 90 |
| AME | Courier Service | 24 | 150 | 130 |
| SAP & NEA | Air freight | 72 | 150 | 130 |
| SAP & NEA | Courier Service | 24 | 200 | 180 |
| SAP & NEA | Standard | 200 | 250 | 80 |

Note, that faster deliveries are more expensive than slower ones. This has to be taken into account when planning customer offers: a sales offer with a fast promised delivery should have a higher sales price than an offer with a slower promised delivery, if you want to make same profit with the different sales offers.

Competitive Factors

The markets and how the customers in each of them react to different terms and investments you can use as competitive factors are shown in the table below (the more stars, the more important the factor is for the demand of your products).

| Market | Volume per month, Road bike | Volume per month, Mountain bike | Timely deliveries | Price | Advertising | Term of payment | Delivery speed | Quality |
|-----------|-----------------------------|---------------------------------|-------------------|------------|-------------|-----------------|----------------|---------|
| EMEA | ~25.000 | ~15.000 | xxxx | xxx - xxxx | xxxx | xxxx | xx - xxxx | xxx |
| AME | ~16.000 | ~12.000 | xxxxx | xxxx | xxxxx | xxx | xxx | xxxxx |
| SAP & NEA | ~8.000 | ~4.000 | xxx | xxxxx | xxx | xxx | xxx | xxxx |

The market volume in the table is configured for 6 participating companies. Your share of the market volume in the beginning of the game will be approximately 1/6 of the total sales volume in the table. Road bike is a downward product and its demand estimated to decrease gradually. Mountain bike, however, is still a strong product in the market.

During the simulation you also have a possibility to develop a new product. The market volume for that new product (Hometrainer) will probably be similar to that of the Mountain bike, but there are some signs that the Hometrainer will become much more important in the future. The R&D department's estimates for the cost of developing a marketable Hometrainer product are around 7-10 % of the company's turnover (during the development period) and this requires steady investment on the product development process. The development project is estimated to last 3-4 weeks.

Typical for the supply market is strong decrease in the prices of Electronics, which is the extra raw material needed in producing Hometrainers (otherwise the BoM for the Hometrainer is the same as with the Mountain bike).

Based on the information given on previous pages, answer to the following questions (answer on the Internet, at the address that was given to you in an email).

1. Which are the factors that affect your success in running Modern bikes Ltd?
2. What do you expect to learn during the simulation training? List at least three topics in the order of importance (1 = the most important).
3. The total market volume is 49.000 Road bikes and 31.000 Mountain bikes per month and there are 6 competing companies. What is the share of sales you should aim at? So, how many Road bikes and Mountain bikes can you expect to sell per month?
4. Based on the previous calculations, how much raw materials are required per day to answer to the demand you calculated above?
 - Wheels?
 - Frames
 - Sets of Gears?
 - Sets of Components?
5. Suppose that you order each raw material from the cheapest suppliers. How much of each raw material you need to have in the inventory when you place the order, in order the raw material inventory to last for production during the raw material delivery? See the supplier table on page 3.
 - Wheels?
 - Frames
 - Sets of Gears?
 - Sets of Components?
6. Modern bikes simulation is about managing the supply chain of the company. Supply Chain Management's (SCM) task is to provide end customers with the products required, in the proper quantities, in the desired form, at the right time, and at the lowest possible cost. A supply chain consists of all stages involved, directly or indirectly, in fulfilling a customer request. Not only does it include the manufacturer and suppliers, but also transporters, warehouses, retailers, and customers themselves. Also included are product development, marketing, operations, distribution, finance, customer service. If you consider your duties in your real world working environment, how are they connected to SCM?

PRELIMINARY STRATEGY DISCUSSION (TO BE PRESENTED IN STRATEGY PRESENTATIONS)

Give your company a name: _____

Briefly plan your preferences in the following decision areas and discuss the reasons why you came to these preferences. This is not supposed to be the final strategy but merely a checklist which will help you to plan your internal operations and your priorities.

1. PRODUCT PORTFOLIO

2. MARKET AREAS AND CUSTOMERS

3. OUTLINE YOUR BUSINESS APPROACH

Evaluate the importance of the following factors to your strategy. Use scale from 1 (not important) to 5 (very important)?

| Differentiator | Importance | | |
|----------------------------|------------|-----|-----------|
| | EMEA | AME | SAP & NEA |
| Price | | | |
| Advertising | | | |
| Promised delivery speed | | | |
| Product development | | | |
| Quality | | | |
| Term of payment | | | |
| Delivery reliability image | | | |

What do these rankings mean in terms of operational strategy?

APPENDIX

RAW MATERIAL SUPPLIERS

| Supplier | Raw material | Price | Delivery time (days) | Term of payment (days) | Min order (units) |
|-------------------------|--------------|----------|----------------------|------------------------|-------------------|
| Stockton Ltd | Wheel | 12,00 | 7 | 7 | 3.000 |
| Allied Wheels Ltd | Wheel | 20,00 | 2 | 21 | 2.000 |
| Stockton Ltd | Wheel | 30,00 | 10 h | 14 | 1.000 |
| Training Industries LTD | Frame | 70,00 | 7 | 7 | |
| Y2K Compliance Ltd | Frame | 85,00 | 3 | 21 | |
| Y2K Compliance Ltd | Frame | 110,00 | 1 | 14 | |
| Training Industries LTD | Gears | 70,00 | 14 | 3 | |
| Training Industries LTD | Gears | 77,00 | 7 | 7 | |
| Gearing and such Ltd | Gears | 90,00 | 3 | 21 | |
| NY Electrobites Ltd. | Components | 14,00 | 7 | 7 | 4.500 |
| Training Industries LTD | Components | 22,00 | 3 | 21 | 3.000 |
| Ntel Memory | Components | 33,00 | 18 h | 14 | 1.500 |
| Ntel Memory | Electronics | 800,00 | 14 | 5 | |
| Ntel Memory | Electronics | 1 000,00 | 7 | 7 | |
| Tosgiba Memory | Electronics | 1 200,00 | 3 | 14 | |

SALES OFFERS IN THE BEGINNING OF THE SIMULATION

| Product | Market area | Sales price | Min | Max | Term of payment (d) | Promised delivery time (h) |
|---------------|-------------|-------------|-----|-----|---------------------|----------------------------|
| Road bike | AME | 890 | 1 | 50 | 14 | 140 |
| Road bike | AME | 850 | 40 | 200 | 14 | 170 |
| Road bike | EMEA | 890 | 1 | 50 | 14 | 80 |
| Road bike | EMEA | 850 | 40 | 200 | 14 | 100 |
| Road bike | SAP & NEA | 930 | 1 | 50 | 14 | 230 |
| Road bike | SAP & NEA | 900 | 40 | 200 | 14 | 280 |
| Mountain bike | AME | 1 250 | 1 | 50 | 14 | 140 |
| Mountain bike | AME | 1 200 | 40 | 200 | 14 | 170 |
| Mountain bike | EMEA | 1 350 | 1 | 50 | 14 | 80 |
| Mountain bike | EMEA | 1 300 | 40 | 200 | 14 | 100 |
| Mountain bike | SAP & NEA | 1 450 | 1 | 50 | 14 | 230 |
| Mountain bike | SAP & NEA | 1 350 | 40 | 200 | 14 | 280 |

TERMS OF DELIVERY

| Market area | Delivery method | Duration (h) | Fixed cost | Cost/unit |
|-------------|-----------------|--------------|------------|-----------|
| EMEA | Standard | 72 | 100 | 8 |
| EMEA | Air freight | 48 | 60 | 20 |
| EMEA | Courier Service | 12 | 80 | 30 |
| AME | Standard | 120 | 200 | 40 |
| AME | Air freight | 48 | 100 | 90 |
| AME | Courier Service | 24 | 150 | 130 |
| SAP & NEA | Standard | 200 | 250 | 80 |
| SAP & NEA | Air freight | 72 | 150 | 130 |
| SAP & NEA | Courier Service | 24 | 200 | 180 |

OUR PRICE LIST IN THE BEGINNING OF THE SIMULATION

| Prodct | Market | Sales price | Lot min | Lot max | Term of payment (d) | Promised delivery time (h) |
|---------------|-----------|-------------|---------|---------|---------------------|----------------------------|
| Road bike | AME | 890 | 1 | 50 | 14 | 140 |
| Road bike | AME | 850 | 40 | 200 | 14 | 170 |
| Road bike | EMEA | 890 | 1 | 50 | 14 | 80 |
| Road bike | EMEA | 850 | 40 | 200 | 14 | 100 |
| Road bike | SAP & NEA | 930 | 1 | 50 | 14 | 230 |
| Road bike | SAP & NEA | 900 | 40 | 200 | 14 | 280 |
| Mountain bike | AME | 1 250 | 1 | 50 | 14 | 140 |
| Mountain bike | AME | 1 200 | 40 | 200 | 14 | 170 |
| Mountain bike | EMEA | 1 350 | 1 | 50 | 14 | 80 |
| Mountain bike | EMEA | 1 300 | 40 | 200 | 14 | 100 |
| Mountain bike | SAP & NEA | 1 450 | 1 | 50 | 14 | 230 |
| Mountain bike | SAP & NEA | 1 350 | 40 | 200 | 14 | 280 |

OUR INVENTORY IN THE BEGINNING OF THE SIMULATION

| Item | Amount |
|---------------|--------|
| Road bike | 500 |
| Mountain bike | 500 |
| Hometrainer | |
| Wheel | 3 200 |
| Electronics | |
| Frame | 1 600 |
| Supplies | 1 280 |
| Components | 5 800 |
| Body | 640 |
| Gears | 1 600 |

CAPACITY INVESTMENTS

| Production cell | New machine capacity | Workers needed for running a machine | New machine price | Delays |
|-----------------|----------------------|--------------------------------------|-------------------|--|
| Body | 2 bodies/h | 1 worker | 2.000.000 € | Machines will be in production use in 10 days from the order. Workers will start working in 4 days from hiring. |
| Supplies | 4 supplies/h | 4 workers | 800.000 € | |
| Bikes | 5 bikes/h | 5 workers | 300.000 € | |

BoM OF HOMETRAINER

Hometrainer is a product you can start producing and sell after a certain R&D process. In the beginning of the simulation, you do not have Hometrainer in your product portfolio. **Hometrainer is manufactured in the same production cell as the two other end products** (Road bike, Mountain bike). Only one of these end products can be manufactured at a time.

