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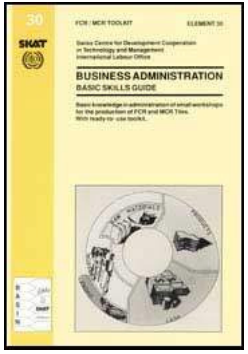

- **Business Administration - Basic Skills Guide (SKAT, 1994, 162 p.)**
  - ***(introduction...)***
  - **Introduction**
    - **Preface**
      - **Purpose**
      - **History**
      - **Toolkit Series**
      - **Supporters**
        - ***(introduction...)***
        - **BASIN**
        - **SKAT**
        - **RAS**
        - **Network**
        - **ILO**
      - **Contact Address**
      - **Recognition**
      - **Comments**
    - **Introduction to Business Administration Basic Skills Guide**
      - **Purpose**
      - **Target Group**
      - **Structure**
      - **Application**

- Local Currency
- Module 1: The Business
  - The Business and its Environment
    - Definition
    - Community
    - Resources
    - Environment
  - The Business Cycle
    - Definition
  - The Structure of a Business
    - Purpose
    - Production
    - Finance
    - Marketing
    - Management
- Module 2: Management
  - Introduction
    - Goal
    - Purpose
  - Decision-Making
    - Purpose
    - Process
  - Implementation
    - Purpose
    - Process

- **Planning**
  - **Purpose**
  - **Products**
  - **Capacity**
  - **Sales**
  - **Production**
  - **Cash**
- **Appendix A: Questionnaire for an Analysis**
- **Appendix B: Exercises**

Module 3: Cash and Credit Management

- **Cash Management**
  - **Goal**
  - **Purpose**
  - **Vouchers**
    - ***(introduction...)***
    - **Receipt**
    - **Invoices**
    - **Filing**
  - **Cash Box**
    - ***(introduction...)***
    - **Family**
    - **Withdrawals**
    - **Excess Cash**
  - **Cash Control**

- **The Cash Book**
  - **Definition**
  - **Format**
  - **Cash Check**
- **Change of the Year**
  - **Purpose**
  - **Tasks**
- **Credit Management**
  - **Purpose**
  - **Credit**
    - ***(introduction...)***
    - **Debtors**
    - **Creditors**
  - **Conclusion**
  - **Credit Control**
    - ***(introduction...)***
    - **Debtors**
    - **Creditors**
- **Cash Planning**
  - **Purpose**
  - **Basic Method**
    - ***(introduction...)***
    - **Limitations**
- **The Cash Budget**
  - **Definition**

- Calculation
- Inflation
- Format
- Summary Format
- Credit Costs
- Other Costs

- Costing
  - Purpose
  - Variable Costs
  - Fixed Costs
- Calculating the Production Costs
  - Format
  - Variable Costs
  - Fixed Costs
  - Total Costs
- Pricing
  - Purpose
  - Pricing Factors
    - *(introduction...)*
    - Costs
    - Market
  - Price - Quantity
  - Reducing Costs
  - Conclusion
- Appendix A: Exercise in Costing

- Example Format Exercise
- Module 7: Marketing
  - Introduction
    - Goal
    - Purpose
  - The Product
    - Definition
    - Features
    - Quality
    - Price/Quantity
  - Marketing Tools
    - Purpose
    - Distribution
    - Promotion
    - Selling
      - *(introduction...)*
      - Main Points
      - Impression

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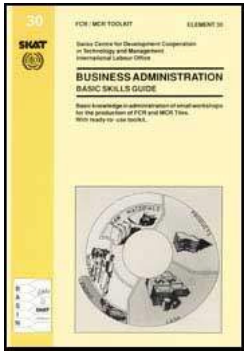
- Business Administration - Basic Skills Guide (SKAT, 1994, 162 p.)
  - *(introduction...)*
  - Introduction
  - Module 1: The Business



- **Module 2: Management**
- **Module 3: Cash and Credit Management**
- **Module 4: Costing and Pricing**
- **Module 5: Profit and Loss Statement**
- **Module 6: Financial Analysis**
- **Module 7: Marketing**

FCR/MCR TOOLKIT ELEMENT 30

Swiss Centre for Development Cooperation in Technology and Management
International Labour Office

Basic knowledge in administration of small workshops for the production of FCR and MCR Tiles.
With ready-to-use toolkit.

COPY FOR EVALUATION

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Please send any contribution to SKAT, Vadianstrasse 42, 9000 St. Gallen,

FCR/MCR TOOLKIT-OVERVIEW

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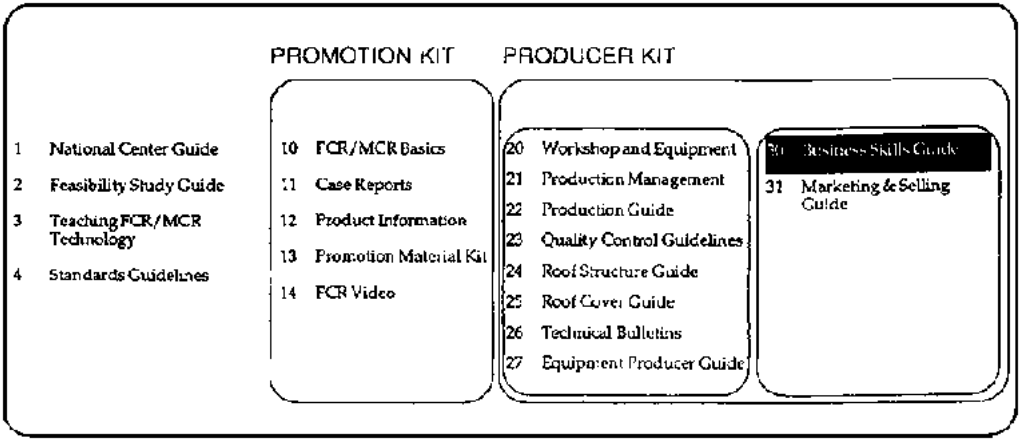

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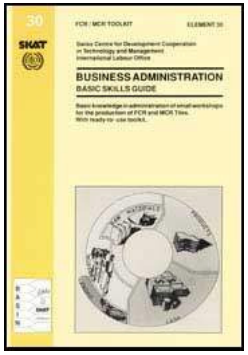
Business Administration - Basic Skills Guide (SKAT, 1994, 162 p.)
Introduction
Preface
Purpose



Business Administration - Basic Skills Guide (SKAT, 1994, 162 p.)

Introduction

Preface

Purpose

This guide is part of the FCR/MCR (Fibre Concrete Roofing/Micro Concrete Roofing) toolkit series although not restricted to this type of business.

History

The FCR/MCR technology was developed in the 1970s based on many years of experiences made with concrete tiles and asbestos cement sheets. During the 1980s it found applications in many countries all over the world. Today the technology is at a mature stage and experiences have shown that it offers a reliable roofing material which can compete in most cases with conventional roofing materials.

Toolkit Series

The FCR/MCR Toolkit series impart the entire know-how that is required in the field of FCR/MCR technology, covering technical as well as economic, organisational, management and marketing aspects. The FCR/MCR Toolkits Overview shows the structure of its contents.

Supporters

SKAT and ILO are co-publishers of the FCR/MCR Toolkit Series which this guide is one element.

BASIN

SKAT is a member of BASIN (Building Advisory Service and Information Network), a coordinated network of experienced international professionals, which was established to provide qualified advice and information in the field of building materials and construction technologies.

The activities of BASIN are divided amongst four leading European, non-profit organisations in the field of appropriate technology viz. GTZ/GATE Germany, ITDG Britain, SKAT Switzerland, CRATerre France.

Each of these organisations covers a separate specialised subject area, thus providing more qualified expertise with greater efficiency.

SKAT

SKAT is an information and documentation centre and a consultancy group engaged in promoting and implementing appropriate technology in partner countries worldwide.

RAS

As a member of BASIN, SKAT specialises in roofing technology, particularly FCR/MCR technology. Within BASIN, SKAT established the Roofing Advisory Service (RAS). To facilitate the promotion and dissemination of roofing technologies, SKAT/RAS produce the FCR/MCR Toolkit Series of which this Business Administration Basic Skills Guide is one element.

Network

A worldwide network of specialists and specialised institutions provides technical support to new and existing producers of FCR/MCR. This helps to ensure the reliability and quality of the products in this growing market. This FCR/MCR network is coordinated by SKAT/RAS.

ILO

A programme for the development, promotion and application of appropriate building

technologies suitable for low-cost construction is currently being implemented by the Micro-enterprise and Informal Sector Section of the Entrepreneurship and Management Development Branch of ILO.

The objectives of this programme are to minimise construction costs, maximise the use of locally-available raw materials and generate productive employment. The program also aims at developing small and micro-enterprises in this sector and at demonstrating their commercial viability. It makes use of an innovative approach whereby some of the activities are carried out in on-going technical cooperation projects for the development of small and micro-enterprises. These projects are executed by ILO or other agencies such as UNDP, as multilateral or bilateral projects. Various approaches are used by this programme: research and development, dissemination of technological information, advisory services to governments and implementation of technical assistance projects.

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Recognition

We would like to thank all the experts, technicians and producers who helped us with valuable comments and remarks based on their extensive experiences. Main resource persons were:

- **Michel Gressot, ILO International Labour Organisation, Geneva, Switzerland**
- **John Grierson, SKAT, Switzerland**
- **Dr. Jrg Grtter, Swisscontact, Switzerland**
- **Paul Gut and Roland Stulz, INTEP, Zurich, Switzerland**

Comments

Comments and feedback information are welcome and will help to further improve this guide. They may be sent to SKAT/RAS or ILO.

Introduction to Business Administration Basic Skills Guide

Purpose

Doing good business is not just a question of using the appropriate technology. You must also be an 'entrepreneur' and have business skills to be successful. This guide is prepared especially to help you develop the business skills you will need to succeed in business. In a popular rather than in a scientific way the principles of business administration are explained. Moreover, a ready-to-use toolkit is provided.

Target Group

It is not possible to make a business skills guide which would suit all the needs of all entrepreneurs all over the world. The present guide is designed as a reference source or teaching aid for the education of microentrepreneurs with no or very little knowledge about business administration.

Structure

The "Business Administration Basic Skills Guide" contains the following modules:

Module 1 **The Business:** What is a business and how it works.

Module 2 **Management:** Decision-making, implementation and planning.

Module 3 **Cash and Credit Management:** Managing cash, cash book, cash budget, creditors' and debtors' records.

Module 4 **Costing and Pricing:** Calculating production costs and determining the best selling price.

Module 5 **Profit and Loss Statement:** Profit and loss statements and exercises.

Module 6 **Financial Analysis:** Analysis of profit and loss statements, controlling and managing for profitability and calculation of the breakeven point.

Module 7 **Marketing:** Distribution, promotion and selling.

Module Structure

Each module is structured in the following way:

- **Purpose or Definition,**
- **Introduction to the Topic,**
- **Basic Concept and Examples,**
- **Exercises with Answers.**

Each section is a self-contained module which includes a cover, table of contents and appendices.

Application

The "Business Administration Basic Skills Guide" covers the financial aspects of running a business. The production aspects are covered by other guides in this series.

The guide can be used as is or, if necessary, changed, adapted and expanded to suit local conditions and requirements. The modular structure allows to use only those sections which are appropriate and necessary. The order in which the modules are presented is not fixed. The modules should be rearranged to suit the demands in your specific situation.

Local Currency

As this toolkit will be used in a number of countries each with its own currency, a special

currency called Local unit of currency (LU) has been used throughout this toolkit. Readers are asked to insert their own currencies and values when doing calculations based on their own businesses.

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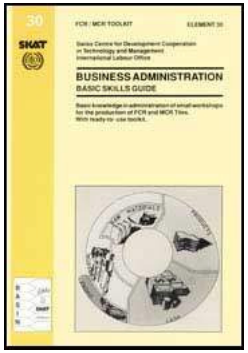


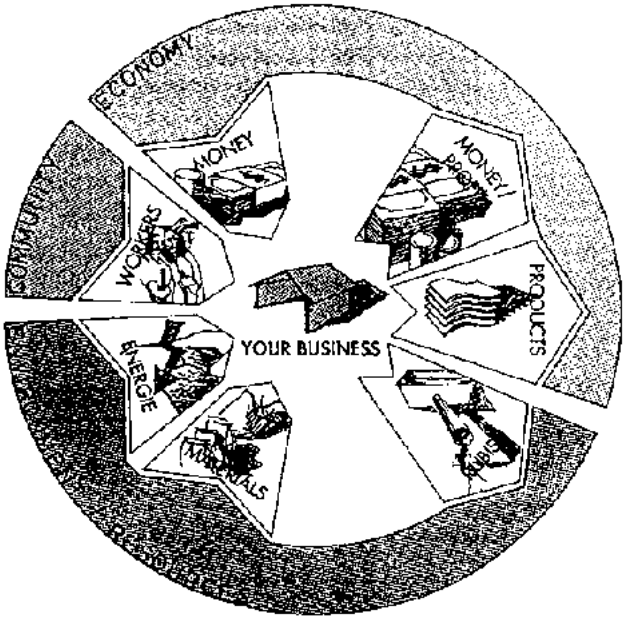
Business Administration - Basic Skills Guide (SKAT, 1994, 162 p.)

Module 1: The Business

The Business and its Environment

Definition

The business is an organization which produces and sells, or only sells goods or services, or both. There exist several links between a business and its ecological and social environment.



Figure

Community

Workers are human beings and have the right to be well treated. Most of them have a family with one or more children. They all have to live from the wage, you pay to them. Please keep in mind that the future of your country depends to a great extent on the education and the way of thinking of today's children. Thus, pay wages which allow your workers to send their children to school. Do not abuse children as cheap workers.

Resources

Most raw materials are made from natural resources. Moreover, you may need water and air in your production process. Please keep in mind that natural resources are limited in our world. Thus, do not waste them.

Environment

A workshop not only produces goods, but it may also produce rubbish, sewage and exhaust fumes. All these things pollute or even contaminate the environment in which we are all living. Therefore, the production of rubbish, sewage and exhaust fumes should be minimized. Normal rubbish is put into a disposal. Contaminated rubbish needs special treatment, never put it into normal disposal. Sewage needs to be purified in a purification plant. Oil, solvents, dye, contaminated water and so on need special treatment, never put them into the drain. Contaminated exhaust fumes need to be filtered.

Be a smart and modern businessman, feel responsible for the social community and the environment!

The Business Cycle

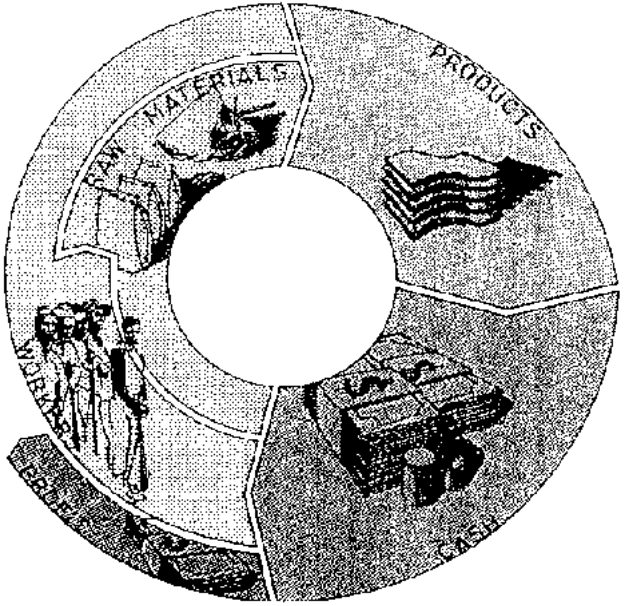
Definition

A new business starts with a good idea and some money. Some of the money is needed to

establish the workshop and to buy equipment and raw materials. Money is also used to pay the workers and operate the business until you gain enough money from selling goods.

Once the business has been established, the next step is to begin producing; raw materials must be transformed into goods by your workers. These goods are then sold and the money received from selling them is used to pay your workers and to buy new raw materials. If you have sold your goods for more than it cost you to make them, you will have made a profit. Profit can be taken out of the business in the form of withdrawals or left in the business and used to improve and enlarge the business.

A business runs through the business cycle all the time:



Figure

The sooner you get back the money you spent on raw materials, workers' wages and operating expenses, the sooner you will make a profit. Large stocks of raw materials and finished goods tie up money and slow down the cycle. Raw materials should be used quickly to produce goods and the finished goods should be sold as soon as possible.

Attention

All businesses keep some raw materials in stock so that production can continue without interruption. In most cases a business should keep stocks of raw materials as low as possible.

However, in certain circumstances it may be necessary to keep large stocks of raw materials on hand. For example:

- When the prices are high for small lots,
- When the transportation costs are high,
- When the inflation is high (and raw materials keep their value better than cash does).

Conclusion: The management task is to find the correct stock levels for your business. The stocks of finished goods "on hand", and of raw materials available for production, should be large enough to meet customer demand and allow continuous production - but they should not be much larger!

The Structure of a Business

Purpose

It is important to understand how a business is structured. A short description is given below of the most important areas of a business.

Production

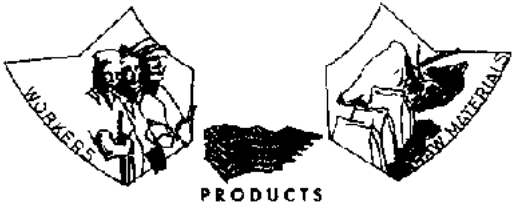
Production is that part of the business which is responsible for turning raw materials into goods with the help of workers and equipment. The shape, quality and quantity of the produced goods should meet customer needs. The production costs should be kept as low as possible. Specific production tasks include:

- **Organization of the workshop (who produces what, how much, where and when). Trained workers are an expensive and precious resource. It is important to select persons who are the most suited for a specific job and to train them until they are as skilled as possible in their work. They should be motivated and well-treated because, output will be higher in a good working atmosphere. Their work should be**

organized in an efficient way to help reduce operation costs.

- **Quality control, wellknown high quality is the best propaganda for your products.**
- **Organisation of the stock.**
- **Operation and maintenance of the equipment.**

The organization of production is not the subject of the present guide.



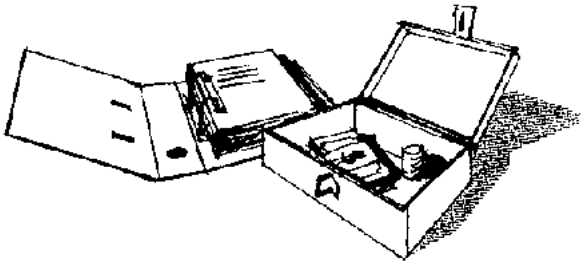
Figure

Finance

The financial part of a business is that part which deals with money. The specific financial tasks are:

- **Cash management (*module 3*).**
- **Managing debtors and creditors (*module 3*).**
- **Maintaining a cashbook (*module 3*).**
- **Cost control and pricing (*module 4*).**
- **Profit and loss statement and its analysis (*modules 5 and 6*).**

The financial organization of a business is the main topic of the present guide.



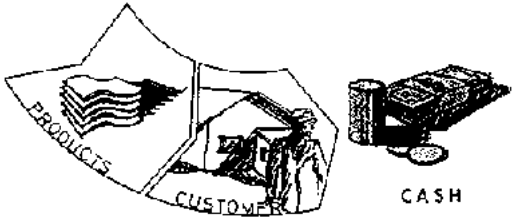
Figure

Marketing

This is the component of the business structure which is responsible for making sure that the customers know about your products. One of the most important goals of the business is to fulfil your customers' needs. The main task of marketing is therefore to find out what these needs are and how to fulfil them with products and services. The specific tasks of marketing are:

- **Market studies (What do customers like? What are your competitors offering? Are there new trends in the roofing and building materials market?)**
- **Design of the products (shape, colour, services)**
- **Quality and price of the products.**
- **Distribution channels (Direct or via retailers?)**
- **Promotion activities (Public relations? Expositions? Fairs? Advertising?)**
- **All selling activities.**

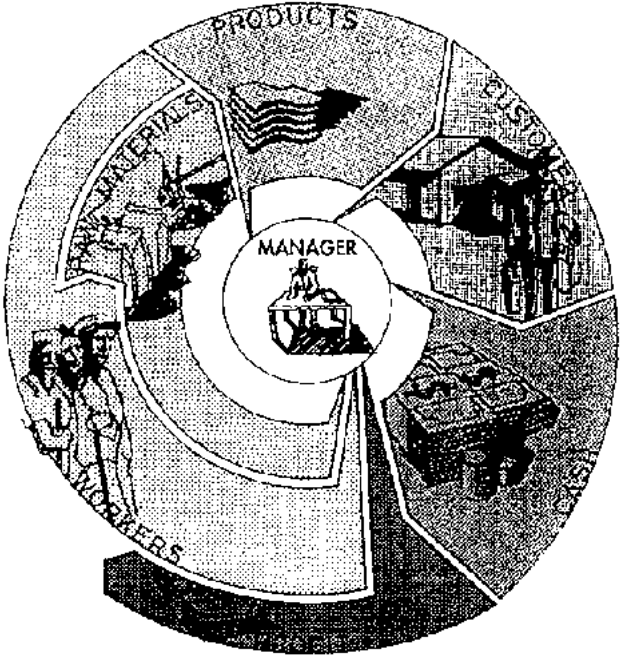
***Module 7* gives a brief description of the main tasks of marketing.**



Figure

Management

There are interrelations between the areas. For example, the production section should only produce the types, quality and quantities of goods that the marketing section has determined can be sold to customers. The marketing section is limited by the marketing budget made available by the finance section and by the manufacturing capacity of the production section.



Figure

The coordination of resources, in order to reach a specific goal in a continously changing world, is a management task. In a normal small tile business the entrepreneur himself will manage most of the business tasks described above. The entrepreneur will probably be the marketing, production, personnel and finance manager in one! As the business grows, more and more of the specific business tasks will be assigned to employees of the business.

***Module 2* looks at management. The main topics are how to make decisions, how to implement them and how to do planning.**

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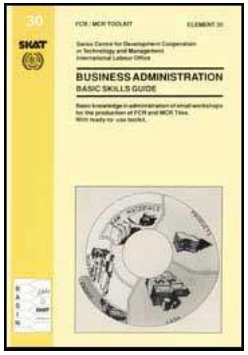

- **Business Administration - Basic Skills Guide (SKAT, 1994, 162 p.)**
  - **Module 2: Management**
    - **Introduction**
      - **Goal**
      - **Purpose**
    - **Decision-Making**
      - **Purpose**
      - **Process**
    - **Implementation**
      - **Purpose**
      - **Process**
    - **Planning**
      - **Purpose**
      - **Products**
      - **Capacity**
      - **Sales**
      - **Production**
      - **Cash**
    - **Appendix A: Questionnaire for an Analysis**

Appendix B: Exercises

Business Administration - Basic Skills Guide (SKAT, 1994, 162 p.)

Module 2: Management

Introduction

Goal

This module explains, how to plan and make decisions, and how to implement them.

Purpose

Management is the coordination of resources, such as money and production capacity, to reach a specific goal. Managing also means to make decisions: What goal should be reached and how. At least, the management is also responsible for the realization of projects and the planning of the whole business.

Decision-Making

Purpose

When doing business, you need to make decisions every day: Do I have do order raw materials? To what date? Where? Sometimes, however, you need to make decisions with a high impact on the future of your business: Should I enlarge the capacity of my workshop? Should I hire or fire workers? Should I change my products? Because of their importance, these latter decisions need to be well-reasoned. For that reason, it's worth thinking about a process which leads to such well-reasoned decisions. The following hints may help to improve your decision-making ability.

Process

Before you can make a decision, you have to know, what are the problems to solve, what are your goals, what are the possibilities you have to solve the problems and what advantages and disadvantages every solution has. Thus, the process of making good decision is as follows:

Step 1

Analyse your situation!

First, analyse the actual situation and consider the most likely future possibilities. See appendix A for the type of questions, you should make.

Mr. Garcias is not satisfied with his business. He would like to improve the situation. First, he analyses his situation;

Mr. Garcia makes a list of his most important problems:

1. He cannot live from his tile-making business. Why not? He does not sell enough tiles. Why not? Only a few people know about his tiles; others do not trust their quality.

2. His workshop and equipment are old and worn out

3. The quality of the tiles is not very good.

Step 2

Set goals!

Now, think about your goals. How would you like the situation to be?

Mr. Garcia has the following goals:

- Mr. Garcia's ultimate goal is to make enough money for his family to live on and to be able to save enough money to buy new equipment after five years.
- In order to reach this ultimate goal, Mr. Garcia has set the following goals:
  - His customers' needs should be found out and fulfilled. For his business to be successful, he needs to sell his products. To sell his products, he needs to know what is needed and what will be bought by the customers.
  - The quality of the tiles should be very good.
  - Make his business profitable by keeping his production costs as low as possible.
- Be able to withdraw LU 20'000 from his business every month for the living costs of his family. This means he has to sell a certain number of tiles every month.

Step 3

Determine your possibilities!

Determine what the possibilities are for reaching your goals.

Mr. Garcia, together with his foreman, goes to a friend who is a good businessman to discuss his problems as identified above. Together they work out a few possibilities for solving these problems and for thus reaching the goals:

1. Mr. Garcia could advertise in local newspapers, on radio or television. He could put up posters all over town. He could write letters to all the architects and building contractors in town.

2. He could overhaul his vibrating table or buy a new, improved one.

3. The quality of his tiles could be improved by educating and training the workers.

Step 4

Make an assessment of the possibilities!

Every possibility has its strong and its weak points. This is the reason why you have to analyse the possibilities to see whether they would help to solve your problems. It is also important to calculate the costs of each possibility and assess whether it corresponds to your goals.

Mr. Garcia writes down all the possibilities and estimates their costs and benefits:

1. Marketing activities:

- Advertising in newspapers: medium costs, low benefit,
- Advertising on radio/TV: high costs, high benefit,
- Posters: low costs, medium benefit,
- Letter to architects and building contractors: low costs, high benefit.

2. Equipment:

- Overhauling the old vibrating table would be much cheaper - about a quarter of the cost -

than buying a new one and the additional lifespan would be three years.

- A new table, although more expensive, would last longer.

3. Quality of tiles:

- Sending all the workers to a training course offered by a special organisation would be expensive.

- Sending the foreman to such a training course would be less expensive. He could then train his workers

Step 5

Decide!

You now have enough information to make important decisions about the future of your business. However, your resources (money, equipment and workers) are limited. You cannot solve all your problems or take advantage of all opportunities all at once. You will have to decide which problems to address first, and which opportunities offer the best chance of improving your business. In other words, it is necessary to set priorities and make plans.

Mr. Garcia makes a ranking of his business problems from the most important to the least important problem:

- Marketing activities,
- Tile quality,
- Production equipment.

At the moment the resources of the business are limited. Only the expansion of marketing activities can be financed. Mr. Garcia decides to do the following:

1. Write letters to all the architects and building contractors in his town. In his letter he will explain the many benefits of FCR/MCR tiles as a roofing material and offer discounts for bulk purchases of his tiles.

2. Put up posters in town.

Implementation

Purpose

The projects, you decided for should be implemented, because without implementation the best idea is not worth very much. The implementation of projects is the primary responsibility of the business owner or manager.

Process

The following steps will help you implement any project:

Step 1

Determine, how to do it!

Decide how to implement your project. List on a sheet of paper the whole way of implementation, *step by step.* This list is your *action plan* (see next page for an example).

Mr. Garcia decided to put up posters in town. Now, he thinks about the implementation of this

decision: First he needs attractive posters to put up. However, he is not an artist Thus, he needs an artist, who could create posters. He knows a few artists. But, who is the best? He has to evaluate one artist. When the artist comes along with his ideas, he has to decide for one idea. Then the artist needs some time to create the poster. NOW the poster has to be printed. When the posters are ready, there are workers needed to fasten them all around the city. He has not enough workers to do so, he needs to hire additional workers. Then, he has to instruct his workers. When the workers have done their work, he has to check it and, if necessary, fasten some additional posters. He writes all these actions down, step by step. Then he thinks about the dates and the responsibilities.

Step 2

Determine the dates, when specific steps have to be completed!

Set the date when each step should be completed.

Step 3

Determine the responsabilities!

Determine who is responsible for each step.

Step 4

Instruct your workers!

Make sure every worker knows what he has to do and when he has to do it.

Step 5

Check the work!

Find the answers to the following questions:

- **Are there problems which require the help of others?**
- **Is the quality of work satisfactory?**
- **Is the work being done on time?**

Checking should be done as frequently as necessary.

Step 6

Keep your action plan up to date!

Your action plan is an important tool and should be kept up to date.

Action	Who is responsible?	By what date finished?	Finished? ✓
Collect addresses of commercial artists, evaluate 3 of them and ask for proposals.	Garcia	3 May	✓
Decide for one artist and place order.	Garcia	6 May	✓
Design posters (draft - version).	Artist	26 May	
Decide for one version.	Garcia	28 May	
Design poster (final version).	Artist	10 June	
Decide for printing.	Garcia	12 June	
Print posters.	Printer	22 June	
Hire workers to put up posters.	Garcia	22 June	
Put up the posters.	Workers	29 June	
Follow up: check posters.	Garcia	3 July	
Where necessary put up additional posters.	Workers	6 July	

Example of an action plan

Planning

Purpose

Everyone makes plans as part of their day-to-day activities. Before going to the market you think about the things you will need to buy - and plan for the money to pay for them, the time needed to shop, and how to transport them. Before buying an expensive item, such as a car, you think about your present and future financial situation - do you have enough money?

Business planning is the same process as personal or household planning. You should estimate your future sales, make a cash-budget, plan your production and think about the future of your products.

Products

Customer preferences may change from time to time. The demand for a certain type of tile may change. It is important to be aware of these changes and to react in time.

Mr. Garcia produces only gray tiles. When a competitor starts producing red tiles his sales increase white Mr. Garcia's decrease. If Mr. Garcia wants to be competitive he will also have to start producing red tiles!

Capacity

The capacity of your workshop should be big enough to meet the demand for tiles. On the other hand, the equipment should be in use full-time, to minimize the fixed costs per tile. From time to time you will have to decide whether the capacity should be increased or decreased. This decision always depends on the market situation - will the overall demand increase or decrease? This is a difficult, but very important question.

Sales

In order to plan production and make a cash management plan, it is necessary to estimate

future sales. Every six months you should estimate and record the expected sales for the next six months.

Production

During production you need raw materials and workers. You must plan for raw materials and workers in advance. Employees should be hired or scheduled and raw materials should be ordered on time. If you know the amount of raw materials needed per day, you can calculate exactly when you have to order more raw materials. It is best to keep some extra stock for unforeseen events!

During normal production, Mr. Garcia uses 1 bag of cement per day. When he orders cement, he has to wait 10 working days until the cement is delivered to his workshop. Mr. Garcia always likes to have at least 5 bags of cement in reserve. When does he order new cement? He orders cement when his stock is down to 15 bags. Thus when delivery is made after ten days, ho will still have 5 bags in reserve.

Cash

If you have no cash you cannot do business. In most businesses the cash level varies considerably: sometimes there is a lot of cash and at other times there is almost no cash in the cash box. You should try to avoid running out of cash. Before ordering equipment or raw materials, make sure that you have enough cash to pay for them. Module 3 ("Cash and Credit Management") will explain how you can plan and manage your cash and avoid cash bottlenecks.

Appendix A: Questionnaire for an Analysis

- **Marketing area**

- **Are you selling enough tiles? If not, why not?**
- **What type of customer buys your tiles?**
- **What types of roofs and tiles do your customers like?**
- **Are their needs changing?**
- **How do the shape, selling price and quality of your tiles compare with those of your competitors?**
- **What are the strong and weak points of the competitors' tiles and other roofing materials?**
- **What are the strong and weak points of your tiles compared to the tiles and roofing materials of your competitors?**
- **What are the trends in the roofing and tile market?**
- **How is the general economic situation and in what direction is it developing? What are the plans of the government and how could they influence your business?**

- **Production area**
  - **Is the quality of the raw materials good?**
  - **Is the quality of your tiles good?**
  - **Is the capacity of your workshop satisfactory? Or is it too small or too large?**
  - **What are your production costs?**

- **Is your equipment in good condition? Should it be repaired or adapted to improve quality and productivity? Do you have equipment breakdowns? How often?**

- **Do you know of any new technologies? If so, what influence could they have on your own business? Is the technology level of your equipment still competitive?**

- **Personnel area**

  - **Do your workers produce tiles of a good quality?**
  - **Is the productivity of the workers satisfactory?**
  - **Are their levels of education and training high enough?**
  - **Are your workers motivated? How is the working atmosphere?**
  - **How are their wages?**
  - **Do you have the right number of workers?**
  - **Is your employee turnover high? If so, why? How does this affect the productivity of your workshop?**

- **Financial area**

  - **Do you have enough money available to continue production?**
  - **Is your business profitable? Is there a trend in your profit? Is it decreasing or increasing?**
  - **Do you have money set aside to buy new equipment?**
  - **Can you repay your loans? Will you be able to get a new loan?**

Appendix B: Exercises

1. Decision-making

Think about your own business and do the following:

- **Analyse your present situation and write down the most important problems.**

- **Analyse your future potential: What are the market trends? What will be the direction of technical development? What are the expected government strategies? Write down the expected effects of these aspects on your business.**

- **Think about your goals. Write them down, ranking them according to their priorities.**

- **Think about your problems and your goals. What problem has the highest priority? Make a ranking and write it down.**

- **Consider potential solutions to your problems. Write them down.**

- **Rate every potential solution. What advantages and disadvantages do they have? How much do they cost and how much labour capacity would they involve? Rank the solutions and for every problem decide on the best solution. Write this down.**

- **Think about your resources. Write down how much money and labour you could invest in a project to improve your situation.**

- **Make some decisions. What problem(s) should be solved first and which solution(s) should be chosen?**

2. Implementation

Considering the problem(s) and solution(s) you have chosen, think about implementation:

- **Make an action plan of things to be done.**

- **Your action plan should indicate:**

- **What action is necessary.**
- **Who is responsible for each action.**
- **When each action should be carried out.**

- **Write down the specific instructions for each person who has responsibility for part of the action plan.**

- **Use your action plan to manage implementation. Follow up frequently and check to see if each action was carried out as planned.**

3. Planning

Write down what planning activities you should do, why you should do them and when you should do them.

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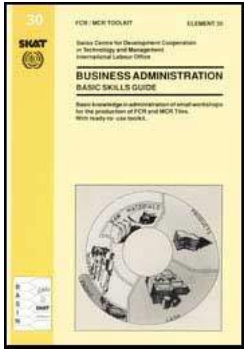


- Filing
- Cash Box
  - *(introduction...)*
  - Family
  - Withdrawals
  - Excess Cash
- Cash Control

- The Cash Book
  - Definition
  - Format
  - Cash Check

- Change of the Year
  - Purpose
  - Tasks

- Credit Management
  - Purpose
  - Credit
    - *(introduction...)*
    - Debtors
    - Creditors
  - Conclusion
  - Credit Control
    - *(introduction...)*
    - Debtors
    - Creditors

- **Cash Planning**
  - **Purpose**
  - **Basic Method**
    - ***(introduction...)***
    - **Limitations**
- **The Cash Budget**
  - **Definition**
  - **Format**
    - ***(introduction...)***
    - **Sales**
    - **Other Cash In**
    - **Raw Materials**
    - **Withdrawals**
    - **Exercise**
  - **Analysis**
    - ***(introduction...)***
    - **Cash Shortage**
    - **Adjustment**
    - **Poor Cash**
- **Appendix A: Cash Book Exercise**
- **Appendix B: Cash Budget Exercise**

Business Administration - Basic Skills Guide (SKAT, 1994, 162 p.)

Module 3: Cash and Credit Management

Cash Management

Goal

This module explains how to handle cash, how to plan for and how to control cash needs.

Purpose

You need cash to do business. You have to buy raw materials, pay your workers for their labour, meet all other expenses and have some cash for your own purposes.

Without cash no business

It is very important to keep control over the cash situation. To keep control, you should always know exactly how much cash you have in your cash box, how much cash comes in, how much is spent, and what cash is used for. Cash control is done with vouchers and a cash book. Many businesses make a cash budget to help plan and manage their cash needs.

Vouchers

For every cash transaction you should have a voucher. There are several reasons for this:

- **Vouchers tell you, how much cash comes in, how much is spent and what cash is used for. So vouchers for cash control are necessary.**
- **Vouchers explain and document the figures in your cash book.**
- **Vouchers serve as proof that payments have been made.**
- **Vouchers are required by law in many countries.**

For every financial transaction there should be a voucher

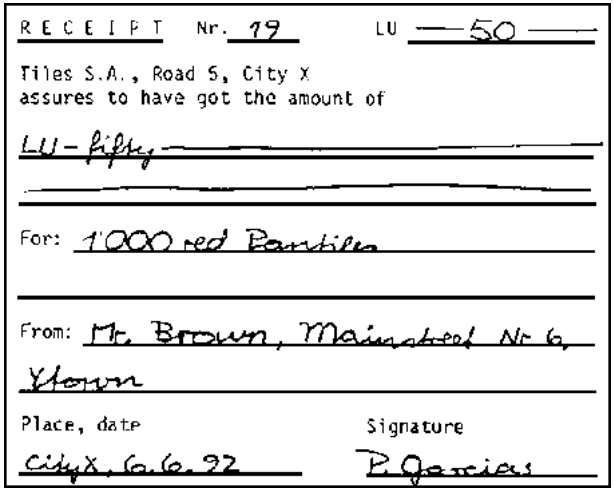
There are two basic types of vouchers: receipts and invoices.

Receipt

The receipt is a voucher for cash which comes in or goes out. With a receipt you can prove that you have paid a certain amount to a certain person. Therefore, there should be a receipt from everyone who has received money from you. Persons who receive money from you can include suppliers of raw materials, bank cashier, or your employees. Your customers will also want a receipt for the cash they pay for your products. A copy of their receipt can be used as the voucher for money coming in.

A receipt should contain the following information:

- **The number of receipt,**
- **The name and address of the person or business who received the money,**
- **The name and address of the person or business who paid,**
- **What the money was paid for,**
- **The amount paid, in figures and in words,**
- **The place and date of payment,**
- **The signature of the person who received the money.**



RECEIPT Nr. 19 LU 50

Tiles S.A., Road 5, City X
assures to have got the amount of

LU - fifty

For: 1'000 red Pantiles

From: Mr. Brown, Mainstreet Nr 6, Ytown

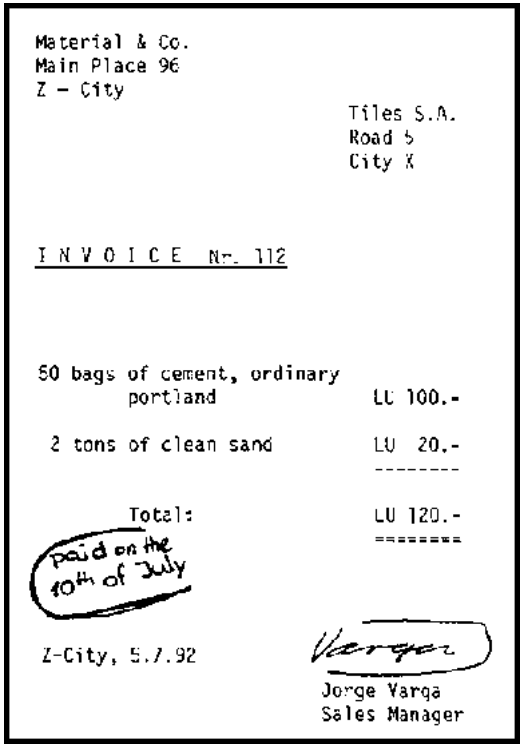
Place, date: CityX, 6.6.22

Signature: P. Garcias

An example of a receipt is given below:

Invoices

If your supplier of raw materials comes along with an invoice, you do not need to write a receipt. In this case, the invoice can also be used as a receipt. It is sufficient, when your supplier writes on the invoice that he has received the money and signes this statement (town, date and signature) as it is shown below.



Material & Co.
Main Place 96
Z - City

Tiles S.A.
Road 5
City X

INVOICE Nr. 112

50 bags of cement, ordinary portland LU 100.-

2 tons of clean sand LU 20.-

Total: LU 120.-

paid on the 10th of July

Z-City, 5.7.92

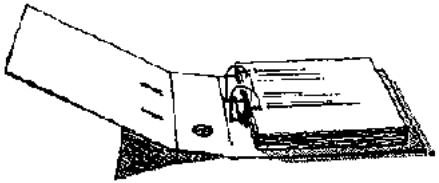
Jorge Varga
Sales Manager

Figure

If you pay the invoice by bank or postal account the voucher from the bank or post office will serve as a receipt.

Filing

In order to retina them, it is a good idea to keep the vouchers in a safe place and in an organised way. You may wish to keep all vouchers in a file according to the date of issue, or the number of the voucher.



Figure

Cash Box

The cash box is for business purposes only. Therefore, only the cash of the business should be stored in the cash box. If money from the business and your own money are mixed up, it is difficult to keep control over the actual financial situation of your business.

According to many experiences it is hard to keep control over the cash situation if too many persons have access to the cash box. For that reason, it is better to have one specified cashier which keeps control over the cash box and all of the vouchers. His motto should be:

Cash (in and out) only in exchange for a voucher

Figure

Family

Cash and materials taken from the business are withdrawals from the business. They are an expense of the business, unless you receive compensation. Keep a record of all cash and materials which are taken from your business by members of your family:

- **Record all cash and materials taken by family members,**
- **From time to time add up the amount of cash and materials taken by family members, and ask for compensation in the form of money, goods or services.**

Once, Mr. Garcia gave some cash to his brother to pay for the doctor. A few months later his brother helped him to finance new equipment.

Withdrawals

Decide how much cash you can withdraw for yourself and your family. Try to keep

personal withdrawals low. Remember, you must also put aside money to buy raw materials, pay wages, replace old equipment, pay taxes and so forth. In addition you should have cash reserves in case business is slow or you want to expand.

Excess Cash

If you have a large amount of cash in your cash box it might be best to put it in a bank, building society or post office savings account. Money saved in this way can be used as a reserve for emergencies or to buy new equipment.

Cash Control

Even if there is a cashier it is necessary to check the cash every day. Below you find a basic method to do so:

1. Count the cash when business opens in the morning.

2. Each time you receive cash or make a cash payment you should prepare a voucher (receipt or invoice).

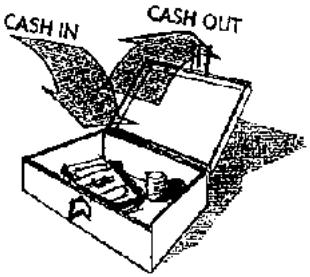
3. Count the cash again at the end of the business day.

4. Each day you should add up all the vouchers for cash received and subtract all the vouchers for cash paid out. The difference between cash in and cash out is then added to (or subtracted from) the amount of cash you had in the morning. This figure should correspond to the actual amount of cash in the cash box at the end of the business day.

The procedure is shown by the following formula:

cash at days beginning

+ cash in
- cash out
= <u>cash at days end</u>



Figure

If the amount in the above calculation corresponds to the actual amount of cash which you have in your cash box at the end of the day, your cash is in order. If not, there may have been an error when handling the cash or adding up the vouchers and you should find out, where the difference lies.

In the morning of the 15th of January, Mr. Garcia counts his cash. There are LU 85.- in the cash box. In the afternoon, 200 bags of cement are delivered and Mr. Garcia has to pay LU 60.- for it. The driver of the truck gives him a receipt. In the evening. Mr. Garcia counts again the cash in his cash box. There are **LU 24** in the cash box. He makes the calculation to control it:

85 + 0 - 60 = **LU 25**

The result of the calculation (LU 25) does not correspond to the actual amount of cash In the cash box (LU 24). Suddenly Mr. Garcia remembers that he spent LU 1.- for the meal, the driver had in the restaurant. Unfortunately he has forgotten to ask for a receipt. He quickly writes a voucher and

closes hie workshop.

The method shown above is very simple, but it has some disadvantages:

- **It is tedious and time-consuming,**
- **It is not suitable as an overview of all transactions,**
- **It is not suitable for drawing conclusions such as the amount of money spent for raw materials during the last month.**

For these reasons it is better to keep a cash book.

The Cash Book

Definition

A better alternative to adding up all the daily vouchers is to keep a cash book. A cash book is simply a book in which all cash transactions of your business are written down.

With the help of a cash book, a supervisor or bookkeeper can analyse the financial situation of your business and give you advice on how to make improvements.

A cash book helps you control your financial situation
You should keep a cash book regularly and carefully

Format

If you already have a cash book and are satisfied with your system, there is no need to change it. If not you will find an example below on how a cash book could be kept.

The following hints will help you to make proper use of the cash book:

- **On the first line you enter the starting cash. The starting cash is the actual amount of cash in your cash box when you start your cash book or when you start a new page in your cash book.**

In the example shown on the next page the starting cash in the cash box on January 1st was LU 80.

Use one line for each transaction. For each transaction include the following information:

- **The date. Under date enter the date on which the cash transaction took place, i.e., the date when the cash was actually put into or taken from the cash box.**

The date of the sample transaction was '5 Jan'.

- **The item. Under item briefly describe the transaction.**

Mr. Garcia had to pay for a lot of cement: '50 Bags of Cement'.

CASH BOOK

YEAR 1992 SHEET NO. 1

DATE	ITEM	VOUCHER NO.	CODE OF ACCOUNT	CASH IN	CASH OUT	BALANCE
1 Jan 92	Starting cash					80.–
5 Jan	50 Bags of Cement	110	200		50.–	30.–
3 Feb	5 m^3 of Sand	111	200		10.–	20.–

16 March	Tiles Mr. Brown	1004	100	100.–		120.–
25 March	Wages Workers	112	300		30.–	90.–
13 May	Office Paper	113	500		2.–	88.–
5 June	Tiles CARITAS	1005	100	150.–		238.–
25 June	Wages Workers	114	300		30.–	208.–
3 July	Advertising "The News"	115	500		20.–	188.–
16 July	50 Bags of Cement	116	200		50.–	138.–
9 Aug	Repair of Moulds	117	500		15.–	123.–
12 Aug	Tiles Mr. Ali	1006	100	100.–		223.–
1 Sep	Stamps	118	500		2.–	221.–
9 Sep	Plastic-Sheets	119	400		5.–	216.–
18 Sep	Wire	120	200		10.–	206.–
25 Sep	Wages Workers	121	300		30.–	176.–
3 Oct	Fee for Electricity	122	400		1.–	175.–
15 Oct	Colorants	123	300		5.–	170.–
7 Nov	5 new Moulds	124			70.–	100.–
20 Nov	Tiles Grupo Sofonías	1007	100	150.–		250.–
12 Dec	20 Bags of Cement	125	200		20.–	230.–
25 Dec	Wages Workers	126	300		30.–	200.–
25 Dec	Salary Administrator	127	300		30.–	170.–
31 Dec	Withdrawals	128	700		75.–	95.–
	TOTAL		80.– +	900.–	– 485.–	= 95.–

Figure

- **Voucher number. Sometimes you need to consult a specific voucher. If the vouchers are filed according to their number they can easily be refound if their number is written in the cash book.**

The voucher from the last transaction had the number '109'. The present voucher therefore has the number '110'.

- **Code of account. One purpose of the cash book is to keep control over the cash situation. Another purpose is to prepare the data for the profit and loss statement (see module 5), which allows you to analyse the financial situation of your workshop. In order to relate the cash transactions to the positions of the profit and loss statement, every position of the profit and loss statement is identified with a code and all cash transactions which correspond to that position receive the same code.**

The coding system used in the profit and loss statement of module 5 looks as follows:

- Sales (of products and services) 100
- Raw Materials 200
- Working Costs (wages, salaries, social expenses) 300
- Production Inputs (water, energy, consumables, others) 400
- Overheads (office, marketing, transports, maintenance, taxes and fees, interests, others) 500
- Depreciation (buildings and equipment) 600

- Withdrawals 700

Cement is raw material, the code of account therefore is: '200'.

- **Cash In or Cash Out. The next two columns are for recording whether cash came in or went out. Use only one column depending on whether there was cash in (cash received) or cash out (cash paid).**

Mr. Garcia had to pay LU 50 for the cement. He therefore writes in the column of 'Cash Out': '50'

- **Balance. Next you must determine the actual amount of cash there should be in the cash box after the transaction has been completed, that is the balance. To find the balance:**

  1. **Start with the balance from the preceding transaction.**
  2. **Add to (cash in) or subtract from (cash out) the previous balance.**
  3. **Write down the answer in the balance column.**

Before paing the 50 bags of cement, Mr. Garcia has LU 80 in the cash box. After paying LU 50 for the cement, he still has LU 30 in his cash box:

LU 80 - LU 50 = LU 30

Cash Check

To be sure that the amount of cash in your cash box is the same as the balance in the cash book, you should count the cash in the cash box every day, compare the two amounts and, if necessary, correct your calculation or recording mistakes.

In Appendix A you will find a cash book exercise. You can use it for your own practice.

Change of the Year

Purpose

It is a good idea to control the whole bookkeeping system once a year and to begin every year with new books.

Tasks

At the end of the year the following should be done:

1. Close the cash book: Add up all "cash in" and "cash out" figures for the year and make the following calculation:

Initial balance + cash in - cash out = final balance

If there is a difference, make the calculation again. If the same difference remains, control all the figures for "cash in", "cash out" and "balance".

2. Make sure that the amount of cash in the cash box corresponds to the final balance. If it does not, you should investigate to find out why there is a difference. Did you forget to record some cash transactions? Is the arithmetic correct? Is some money lost?

3. Prepare a profit and loss statement (see module 5) for the preceding year and determine the Net Profit (or Loss).

4. Determine the appropriate amount of withdrawals. Make the end of year withdrawals and enter the amounts in the cash book and profit and loss statement.

Determine the retained profit (or loss).

5. Start the New Year with a new cash book.

Credit Management

Purpose

If your customers do not pay for their tiles, you would not be able to pay your workers or pay for raw materials. Very soon your workers would look for new jobs, your suppliers would no longer supply your raw materials and finally, production would stop. If your business is to succeed, you must manage the credit you give to your customers, just as you must manage the credit you receive from your suppliers.

Credit

Sometimes, your customers will not be able to pay immediately, although they take home the goods they have purchased in your business. That means: You give credit to your customers. The customers to whom you have given credit are called debtors.

Sometimes, you do not need to pay immediately for the things you purchase with your suppliers. Your suppliers may also give you credit. The suppliers who have given you credit are called creditors.

There is an important difference to regular credits from a bank: No interest is paid.

Debtors

You should keep the number of your debtors as low as possible. When you give credit your cash is tied up. You receive no interest and the value of the credit given may be reduced by inflation. By the time your debtors pay their bills, the value of the money may be less

than when you gave the credit.

Creditors

You should not have many creditors either, and always be able to pay your debts within the agreed upon time limit.

Conclusion

The following two rules should form the basis of your credit management system:

1. The number of your debtors and creditors should be kept as low as possible.
2. The amount of creditors should not be higher than the amount of debtors.

Credit Control

It is possible to have a profitable business that has no cash because your customers have not yet paid for the goods they received on credit. For this reason you need a credit control system.

Debtors

Your debtors can be controlled in an efficient way by using two files:

- **Customer invoice file. When you write an invoice keep one copy in the customer invoice file. File the invoices in numerical order (voucher no. or date). In this file you will always be able to see who owes you how much. From time to time look through the old invoices and write reminders to the customers who have not yet paid their invoices, or visit them and collect the amount owed to you. When a**

customer only pays part of an invoice, make a note on it and leave it in the file.

- **Paid customer invoices. When a customer pays the full amount of the invoice, stamp or write "paid" on your copy of the invoice. Remove this invoice from the file 'customer invoice file' and put it into a tile labelled 'paid customer invoices.**

Creditors

Your creditors can be controlled by the same way:

- **The supplier invoice file. Use this file for invoices which you have received from suppliers for goods or raw materials.**

- **Paid suppliers invoices. Once you have made payment, write "paid" on the invoice, stating when and by whom payment was authorised and confirming that the details have been checked. Transfer the invoice to the file 'paid suppliers invoices'.**

Cash Planning

Purpose

Sometimes a business will have a large amount of cash and sometimes there will be almost no cash in the cash box. Though this is a normal situation, it is one that calls for careful planning to make sure that there is always enough cash to pay the workers and buy raw materials. Always make a cash plan before ordering equipment or raw materials and make sure that there is enough cash to pay for them.

You should plan your expenses

Basic Method

A basic method to prevent cash shortages is the following: Always keep a certain amount of cash as reserve. When a payment leads to a situation where you have to make use of this reserve, you make the following:

1. Write down the most important expected expenses and incomings of the immediate future (one to three months).

2. If you see that there is no danger of a cash shortage you can pay cash without worrying. If, however, you see that a cash shortage is likely to occur you should act immediately. Try to find an acceptable solution for everybody through negotiations.

To determine the amount of the reserve, start with a small amount, e.g., one month's expenses. If you always have a lot of cash in the cash box, the amount of reserve is too high and might be reduced by puting some money in a bank account. If you often run into situations with cash shortages, the amount of reserve is too low. After a certain amount of experience, you will find out, what amount of reserve is best for you.

Attention
If you frequently run into a cash shortage, and cannot manage to keep a sufficient cash reserve, you may have a severe problem. Below ('Poor Cash'), you will find further information.

Mr. Garcia always trys to keep at least LU 50 in his cash box. On the 16th of March 1992, he has LU 50 in his cash box. In other words, he is on the limit of his cash reserve. Therefore, he decides to estimate future income and expenses to prevent a future cash shortage:

Date	Item	In	Out	Balance

16.3.92	Starting Cash			LU 50
25.3.92	Wages		LU 30	LU 20
10.4.92	Raw Material		LU 40	(LU 20)
12.4.92	Taxes		LU 10	(LU 30)
15.4.92	Sales	LU 100		LU 70

Without a doubt Mr. Garcia will run into a cash shortage by the 10th of April! The cash plan he made shows that he will need LU 20 more than he will have on 10th April, and that he will need a total of LU 30 more than he will have by the 15th of April. The tax payment cannot be delayed and the raw material must be paid for on delivery. Mr. Garcia looks at his production plan and sees that he still has enough raw material to produce until the 24th of April. He decides to postpone the planned purchase of cement, to prevent a cash shortage. He makes a new cash plan to see if this will solve the problem of the anticipated cash shortage. His new cash plan looks like this:

Date	Item	In	Out	Balance
16.3.92	Starting Cash			LU 50
25.3.92	Wages		LU 30	LU 20
12.4.92	Taxes		LU 10	LU 10
15.4.92	Sales	LU 100		LU 110
24.4.92	Raw Material		LU 40	LU 70

The new cash plan shows that Mr. Garcia can continue production, pay his workers and his taxes and still have **no cash shortage.**

Limitations

The basic method may lead to a high cash reserve which is only used exceptionally. In other words, normally there is too much money in the cash box and it cannot be used for other purposes. When this becomes a problem, you should use a more sophisticated method - the cash budget. The next section tells you how to prepare such a cash budget.

The Cash Budget

Definition

The cash budget is a plan which shows the future movements of cash - the cash flow - in and out of the business. A cash budget is a projection - a look into the future. Some amounts will be known, but others will have to be estimated. The following is an example of a simple cash budget:

CASH BUDGET Tiles S.A.

	January	February	March
Cash beginning of month	50	(90)	(30)
+ Sales	100	30	100
- Expenses	60	90	60
Cash at end of month	(90)	(30)	70

Figure

At the beginning of January there are LU 50.- in the cash box. The incoming cash from selling products is estimated to be LU 100.-, the cash flowing out of business through expenses is estimated to be LU 60.- Therefore, at the end of January there are still LU 90.-

in the cash box. LU 90.-, however, is the amount of cash present at the beginning of February, and so on.

Format

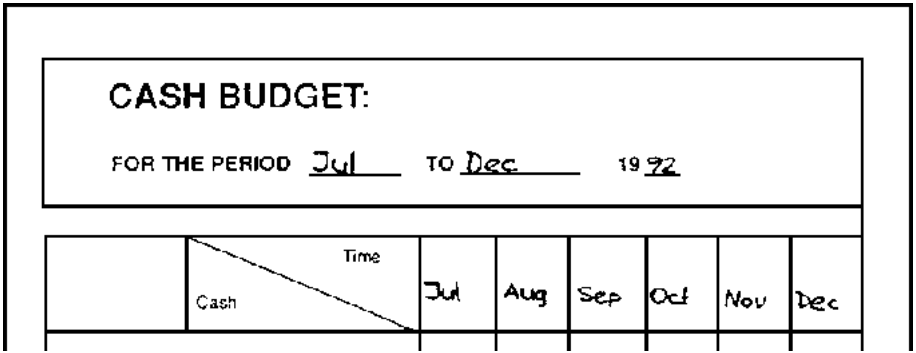
An example of a cash budget format is given on the next side. The following hints will help you prepare and use the cash budget:

Sales

Sales are based on past sales and adjusted for estimated future sales trends. The figure for sales is entered in the field for the month for which the cash for sales is received. When tiles are sold on credit, payment is not received at the time of the sale. Cash payment is received later, when your customers pay their accounts.

Other Cash In

If you expect to receive cash from *any other source,* for example from selling a machine, enter the estimated amount on the line 'Other Cash In'.



CASH BUDGET:

FOR THE PERIOD Jul TO Dec 1972

Cash \ Time	Jul	Aug	Sep	Oct	Nov	Dec

CASH AT START		15'000	25'200	28'800	-20'650	3'600	43'900
CASH IN	Cash Sales	50'000	60'000	50'000	80'000	75'000	80'000
	Other CASH IN	300	200	250	450	5'500	450
	TOTAL CASH IN	50'300	60'200	50'250	70'450	80'500	80'450
CASH AT START + CASH IN		65'300	85'400	79'050	49'800	84'100	124'350
CASH OUT	Wages	25'000	25'000	25'000	30'000	30'000	30'000
	Raw Materials		2'000	60'000	1'000	500	60'000
	Overheads (water, energy, management)	3'600	3'600	3'700	3'700	3'700	3'700
	Maintenance	1'500	1'000	1'000	1'500	1'000	1'000
	Withdrawals	5'000	5'000	5'000	5'000	5'000	5'000
	Loan repayment						
	Loan interest						10'000
	Investments	5'000	20'000	5'000			
	Other CASH OUT				5'000		
	TOTAL CASH OUT	40'100	56'600	99'700	46'200	40'200	109'700
CASH AT END (START + CASH IN) - CASH OUT		25'200	28'800	-20'650	3'600	43'900	14'650

Figure

Raw Materials

From the products you plan to produce the next six months, you calculate how much raw materials you need for this time. Then you estimate, what batches you have to order at what date, when they arrive and when payment is due.

The cash budget must show cash payment for raw materials when it is expected to be made, not when the order is placed or when delivery is made.

Withdrawals

Estimate how much cash will be withdrawn from the business each month and enter the amounts for each month on the line for 'Withdrawals'.

Exercise

In Appendix B you will find a cash budget exercise. You can use it for your own practice.

Analysis

The purpose of the cash budget is to have enough cash at all the times. The cash budget is a useful tool to help you plan your cash requirements. A business cannot keep running if it has no cash - even if it is making a profit. For that reason, the "Cash at End" is the information to be analysed:

Cash Shortage

If your cash budget indicates a negative or very small cash amount, such as the 'Cash at End' in September as shown in the example above, then you must analyse the situation

and take corrective action. Can you postpone delivery of raw materials? Can you negotiate credit from your suppliers? Can you collect credit payments that are due from your customers? Can you borrow money from a bank, or from your family? Some action must be taken so that your business does not run out of cash. On the next page, you will find an example.

Adjustment

If you postpone the investments planned for August and September until November, you can avoid a cash shortage in September.

The cash budget below shows the result of planning to meet the expected cash shortage by post-poning investments until November.

CASH BUDGET:

FOR THE PERIOD Jul TO Dec 19 92

	Time / Cash	Jul	Aug	Sep	Oct	Nov	Dec
CASH AT START		15'000	25'400	48'800	4'350	28'600	43'900
CASH IN	Cash Sales	50'000	60'000	50'000	70'000	75'000	80'000
	Other CASH IN	300	200	250	450	5'900	450

	TOTAL CASH IN	50'300	60200	50'250	70'450	60'500	60'450
CASH AT START + CASH IN							
CASH OUT	Wages	25'000	25'000	25'000	30'000	30'000	30'000
	Raw Materials		2'000	60'000	1'000	500	60'000
	Overheads (water, energy, management)	3'600	3'600	3'700	3'700	3'700	3'700
	Maintenance	1'500	1'000	1'000	1'500	1'000	1'000
	Withdrawals	5'000	5'000	5'000	5'000	5'000	5'000
	Loan repayment						
	Loan interest						10'000
	Investments	5'000	20'000	5'000		25'000	
	Other CASH OUT				5'000		
	TOTAL CASH OUT	40'100	36'000	94'700	46'200	65'200	109'700
CASH AT END (START + CASH IN) - CASH OUT		25'200	49'800	1'350	28'600	43'900	11'650

Figure

Poor Cash

If the amount of 'Cash at End' is always small and often negative, it is a clear sign of a problem. You should analyse the situation and take corrective action. The problem may be

caused by one or more of the following:

- **Low profits. The business is not doing well. Cash may be low because profits are low or even negative (then you are in a loosing business). The profit and loss account (see module 5) shows whether the business is making a profit or a loss.**

- **Too much customer credit. The business may be making a profit, but the profit might be tied up in credit sales that have not yet been paid. The business may need to collect outstanding credit and reduce credit sales. Add up your sales credits and look whether their collection would help.**

- **Excessive withdrawals. A low cash level can result if the owner or family members take too much cash from the business.**

- **Stocks of raw materials are too big. The business may have too much money tied up in raw materials. In normal circumstances raw materials should be just sufficient to meet current production needs - plus a little reserve.**

Appendix A: Cash Book Exercise

Make a copy of the cash book format and enter the following transactions from Garcia's Tile Factory:

1 Jan 91 Start of the new year. There are LU 85 in the cash box.

15 Jan 91 Purchase: 200 bags of cement for LU 60. Voucher no. 100.

18 Jan 91 Purchase: 5 tons of sand for LU 10. Voucher no. 101.

23 Jan 91 Pay: water and electricity fee, LU 3. Voucher no. 102.

13 Feb 91 Cash Sale: Mr. Brown pays LU 80 for tiles. Voucher no. 1002.

3 Mar 91 Purchase: plastic sheets for LU 1. Voucher no. 105.

25 Mar 91 Pay: workers' wages, LU 30. Voucher no. 106.

12 Apr 91 Pay: maintenance (repair moulds), LU 10. Voucher no. 108.

22 May 91 Cash Sale: Mr. Grey pays LU 150 for tiles. Voucher no. 1003.

20 Jun 91 Pay: workers' wages, LU 35. Voucher no. 109.

3 Jul 91 Cash Sale: Mr. Mwangi pays LU 100 for tiles. Voucher no. 1004.

15 Jul 91 Purchase: new moulds, LU 40. Voucher no. 110.

18 Aug 91 Purchase: office supplies, LU 1. Voucher no. 111.

23 Aug 91 Pay: manager's salary, LU 40. Voucher no. 112.

6 Sep 91 Cash Sale: an NGO pays LU 100 for tiles. Voucher no. 1005.

25 Sep 91 Pay: workers' wages, LU 40. Voucher no. 113.

3 Oct 91 Pay: The News' LU 8 for an advertisement. Voucher no. 114.

16 Oct 91 Purchase: 200 bags of cement for LU 60. Voucher no. 115.

16 Oct 91 Purchase: 5 tons of sand for LU 10. Voucher no. 116.

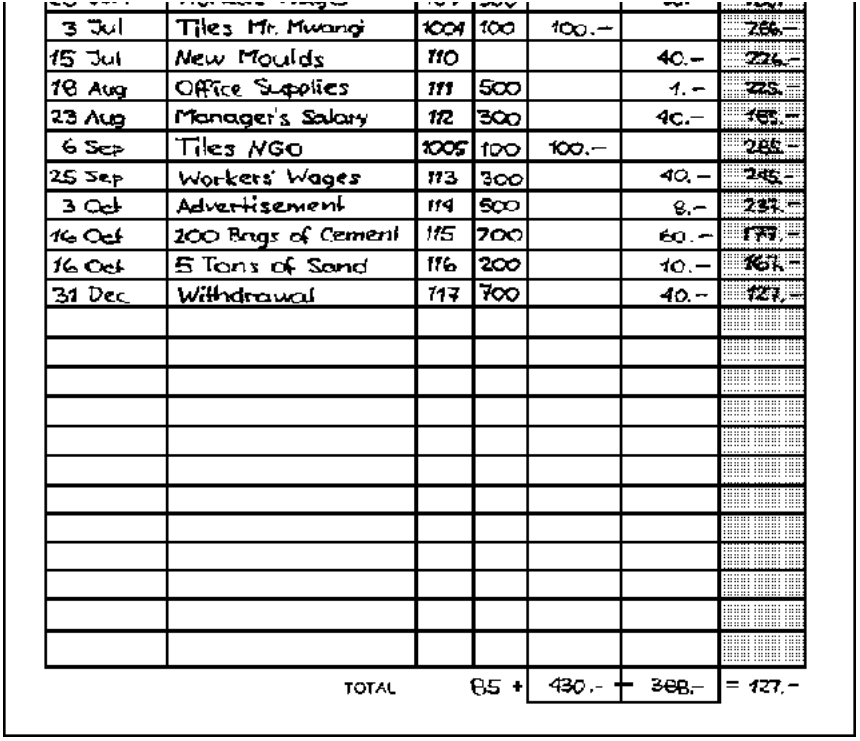
31 Dec 91 Withdrawal: Mr. Garcia withdraws LU 40. Voucher no. 117.

The answer to the cash book exercise is given next.

CASH BOOK

YEAR 1991 SHEET NO. 1

DATE	ITEM	VOUCHER NO	CODE OF ACCOUNT	CASH IN	CASH OUT	BALANCE
1 Jan	Starting cash					85.–
15 Jan	200 Bags of Cement	100	700		60.–	25.–
18 Jan	5 Tons of Sand	101	200		10.–	15.–
23 Jan	Water and Energy	102	400		3.–	12.–
13 Feb	Tiles Mr. Brown	1002	100	80.–		92.–
3 Mar	Plastic Sheets	105	400		1.–	91.–
25 Mar	Workers' Wages	106	300		30.–	61.–
12 Apr	Repair of Moulds	108	500		10.–	51.–
22 May	Tiles Mr. Grey	1003	100	150.–		201.–
20 Jun	Workers' Wages	109	300		35.–	166.–



3 Jul	Tiles Mr. Mwangi	1004	100	100.–		286.–
15 Jul	New Moulds	110			40.–	226.–
18 Aug	Office Supplies	111	500		1.–	225.–
23 Aug	Manager's Salary	112	300		40.–	185.–
6 Sep	Tiles NGO	1005	100	100.–		285.–
25 Sep	Workers' Wages	113	300		40.–	245.–
3 Oct	Advertisement	114	500		8.–	237.–
16 Oct	200 Bags of Cement	115	700		60.–	177.–
16 Oct	5 Tons of Sand	116	200		10.–	167.–
31 Dec	Withdrawal	117	700		40.–	127.–
	TOTAL		85 +	430.–	– 388.–	= 127.–

Figure

Appendix B: Cash Budget Exercise

Make a copy of the cash budget format and enter the following transactions from Garcia's Tile Factory:

- **The cash budget is for the period from January 1992 to June 1992.**
- **The 'Cash at Start' on the 1st of January is LU 50.**
- **The sales manager estimates that future sales will be:**
  - **January: LU 100**
  - **February: LU 50 cash sales (directly paid), LU 50 credit sales (paid one month later).**
  - **March: LU 110**
  - **April: LU 120**
  - **May: LU 140**
  - **June: LU 140**
- **He plans to pay the following wages to his workers:**
  - **January, February, March and April: LU 40 per month**
  - **May and June: LU 50 per month**
- **Based on the figures from the sales of tiles, the production manager estimates the cash needed to buy raw materials:**
  - **January: LU 20**
  - **February: LU 40. Moreover, new sand is delivered. It costs LU 30. The invoice says that it must be paid in March.**
  - **March and April: LU 50 per month**
  - **May and June: LU 60 per month**

- **Overhead expenses are estimated to be LU 10 per month in April, May and June.**
- **Maintenance expenses are estimated to be LU 10 per month in March and June.**
- **In June Mr. Garcia withdraws LU 50, and a loan interest of LU 10 is paid.**
- **In May he plans an investment in new equipment of LU 50. The old equipment will be sold to a friend in June for LU 20.**

The answer to the cash budget exercise is given next.

CASH BUDGET:

FOR THE PERIOD Jan TO Jun 1992

	Time / Cash	Jan	Feb	Mar	Apr	May	Jun
CASH AT START		50	90	60	90	110	80
CASH IN	Cash Sales	100	50	160	120	140	140
	Other CASH IN						20
	TOTAL CASH IN	100	50	160	120	140	160
CASH AT START + CASH IN		150	140	220	210	250	240

CASH OUT	Wages	40	40	40	40	50	50
	Raw Materials	20	40	80	50	60	60
	Overheads (water, energy, management)				10	10	10
	Maintenance			10			10
	Withdrawals						50
	Loan repayment						
	Loan interest						10
	Investments					50	
	Other CASH OUT						
	TOTAL CASH OUT	60	80	130	100	170	190
CASH AT END (START + CASH IN) - CASH OUT		90	60	90	110	80	50

Figure

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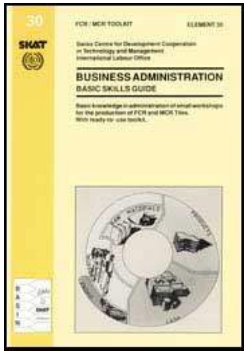


- Purpose
- Types of Costs
  - Definition
  - Material Costs
  - Labour Costs
  - Depreciation
    - *(introduction...)*
    - Calculation
    - Inflation
    - Format
    - Summary Format
  - Credit Costs
  - Other Costs
- Costing
  - Purpose
  - Variable Costs
  - Fixed Costs
- Calculating the Production Costs
  - Format
  - Variable Costs
  - Fixed Costs
  - Total Costs
- Pricing
  - Purpose

Business Administration - Basic Skills Guide (SKAT, 1994, 162 p.)

Module 4: Costing and Pricing

Introduction

Goal

This module explains, what costs are and how to calculate them. In addition, some hints are given on how to find the best selling price for your products.

Purpose

The main purpose of business is to make money, but it is not always easy to know whether you are making or losing money. If you spend more money producing goods than you get from selling them, you will lose money.

To avoid getting into this situation, it is important to know the production costs per piece.

Only if you set a selling price that allows you at least to cover all your production costs, you will make a profit.

Types of Costs

Definition

Costs are all expenses which result from *producing* and *selling* goods. The main types of costs that you should know are described below.

Material Costs

To produce any goods you need the following types of material:

- **Raw materials. These are the basic materials which are combined to make your goods. Examples are cement, sand, aggregate, colorants and wire to produce MCR-tiles.**

- **Consumables. Consumables are the materials that are used up - *consumed* - in the process of producing and selling goods. However, consumables do not make part of the final product. Examples are plastic sheets to produce MCR-tiles.**

Labour Costs

You have to pay the employees of your business:

- **Wages. These are payments made to the workers who are directly involved in producing goods. Wages are usually based on time or on volume of production.**

- **Salaries. Payments to staff who are not directly involved in the production process. These include foremen, administrators, salesmen and drivers. Normally**

salaries are based on time worked and are not related to the amount of goods produced.

- **Social security. In many countries employers have to make social insurance payments for every worker. Social security can include payments into a pension plan and payments during illness or maternity leave.**

- **Holidays. In some countries workers are paid for a few weeks of holiday.**

Depreciation

Depreciation is the special term used when referring to the *costs to the business that results from investments losing their value over time.*

Investments are all the items owned by the business that last a long time. Investments include production equipment such as machines, administrative equipment such as office furniture, storage cabinets, calculators, and land and buildings which belong to the business. With the exception of land, all investments lose their value over time. For example, an old building is worth much less than a new one.

Figure

This loss in value are costs. Therefore, depreciation must be included when calculating production costs.

Attention

Depreciation falls under costs, but cash spent on investments does **not**! For this reason costs and cash spent on the business must be regarded as separate things.

Calculation

The yearly amount of depreciation is determined as follows:

Step 1

Estimate how many years an investment will last. This number of years is known as the lifetime.

Step 2

Divide the costs of the investment by the lifetime in years to get the yearly amount of depreciation.

$$yearly\,depreciation = \frac{price\,of\,the\,investment}{lifetime(years)}$$

In 1988 Mr. Garcia buys a vibrating table (machine to produce MCR-tiles) for LU 3'000. The estimated lifetime is 5 years. Therefore the yearly **depreciation** is:

$$\frac{\text{LU 3'000}(price\,of\,the\,investment)}{\text{5 years}(lifetime\,in\,years)} = \text{LU 600}(Yearly\,depreciation)$$

The **yearly depreciation costs** of the machine are LU 600. Or, to put it another way, an investment of LU 3'000 which lasts 5 years, costs the business LU 600 per year.

If a profit and loss statement (see Module 5) is made every month, the monthly

depreciation must be calculated. A year has twelve months; therefore the monthly depreciation is one twelfth of the yearly depreciation. If the yearly depreciation is LU 600, the monthly depreciation is 600 divided by 12 = LU 50.

Inflation

If the rate of inflation is high, e.g., 100% per year, the LU 600.- do not reflect the actual loss in value after one year, because now the LU 600.- are only worth half. The higher the rate of inflation, the stronger is this effect. Therefore, in countries with a rate of inflation higher than 30%, the calculation of depreciation should be based on a hard currency such as US dollars.

Mr. Garcia makes an example with one of his vibration tables:

1. Price of a new machine is US$ 1'200
2. The lifetime of a new machine is estimated to be 5 years
3. Depreciation in $: 1'200 divided by 5 = $240 per year
4. Exchange rate: LU: $ = 2:1

5. Depreciation in LU: $ 240 × 2 = LU 480

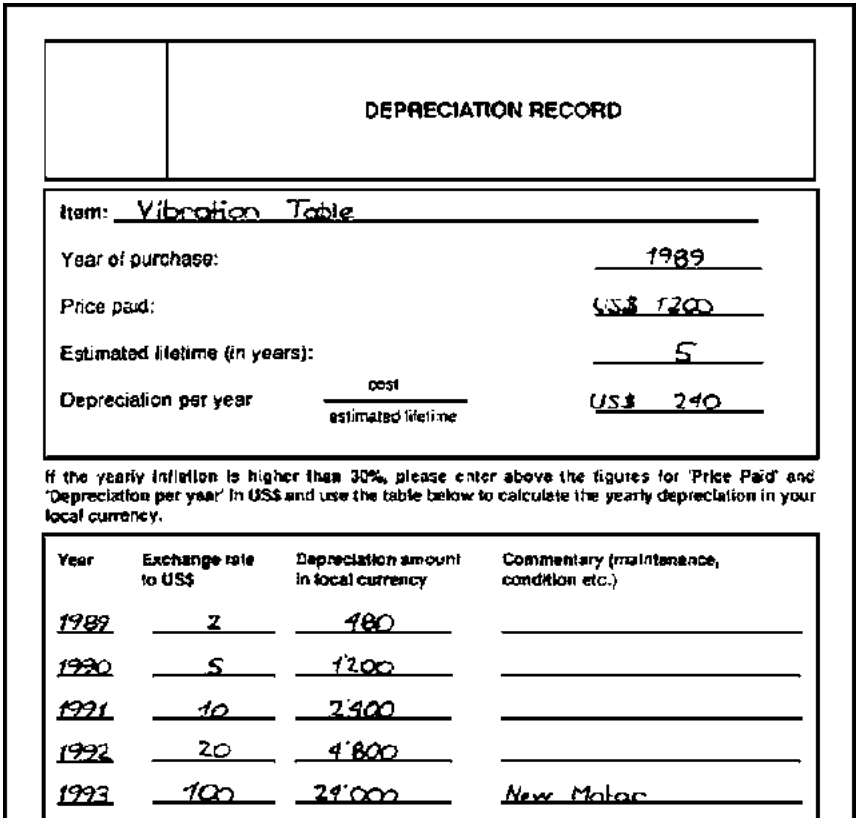
The monthly depreciation is calculated in the same way. First calculate the monthly depreciation in dollars, then calculate the monthly depreciation in local currency.

Format

With the format shown below the yearly depreciation can be determined, even in a country with a high rate of inflation. In the upper part, the yearly depreciation amount is determined as shown above. In the lower part, the amounts of yearly depreciation in the

local currency are determined.

The effect of a growing rate of inflation can be seen very well: The amount of depreciation in local currency is increasing all the time.



DEPRECIATION RECORD

Item: Vibration Table

Year of purchase: 1989

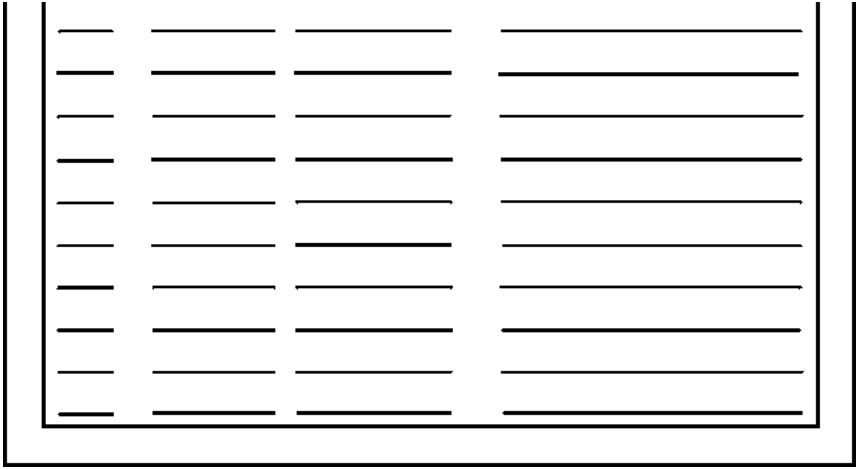
Price paid: US$ 1200

Estimated lifetime (in years): 5

Depreciation per year $\frac{\text{cost}}{\text{estimated lifetime}}$ US$ 240

If the yearly inflation is higher than 30%, please enter above the figures for 'Price Paid' and 'Depreciation per year' in US$ and use the table below to calculate the yearly depreciation in your local currency.

Year	Exchange rate to US$	Depreciation amount in local currency	Commentary (maintenance, condition etc.)
1989	2	480	
1990	5	1'200	
1991	10	2'400	
1992	20	4'800	
1993	100	24'000	New Motor



Figure

Summary Format

In the profit and loss statement (see module 5) the total amount of depreciation is needed. To determine this figure you may need the format "Depreciation Summary".

Credit Costs

Most businesses need credit from time to time. Money borrowed from a bank or moneylender is not free. Interest charges and bank fees normally must be paid when a business borrows money.

Other Costs

There are many other types of costs such as

- **Water and energy, including electricity, firewood, and fuel costs,**
- **Transports, including shipping costs,**
- **Maintenance, including repairs to buildings and equipment,**
- **Office expenses, including stationery, postage and telephone,**
- **Marketing, including advertising and selling costs,**
- **Taxes and fees,**
- **Education of your workers.**

Costing

Purpose

The purpose of costing is to find the best selling price for your products. The costs of producing goods must be calculated *before* the selling price can be determined.

You must know which costs change as the quantity of goods produced changes and which costs remain the same even when the production volume increases or decreases. Thus, there are two major categories of costs: 'variable costs' and 'fixed costs'.

Variable Costs

Variable costs are costs that are directly related to the volume of production. If the volume changes, variable costs will change proportionally. The following costs are variable costs:

- **Raw materials,**
- **Wages and social security payments for production workers,**
- **Energy,**
- **Water,**
- **Transports.**

Fixed Costs

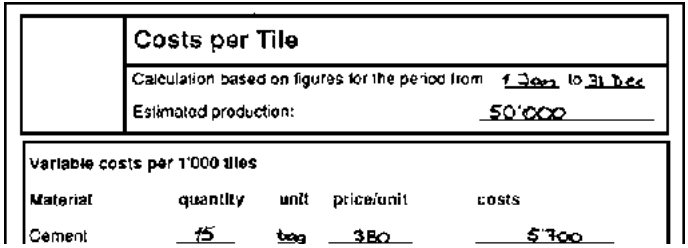
Fixed costs are those costs that do not change - that is, they remain fixed - even when the volume of production increases or decreases. The following costs are fixed costs:

- **Consumables,**
- **Salaries and social security payments for employees not directly involved in producing tiles,**
- **Depreciation,**
- **Interest charges and bank fees,**
- **Repairs and maintenance,**
- **Office and administrative expenses,**
- **Marketing expenses,**
- **Taxes and fees,**
- **Education.**

Calculating the Production Costs

Format

The costs per piece are the total of all variable and fixed costs divided by the number of pieces produced. The following is an example of a cost calculation for FCR/MCR tiles:



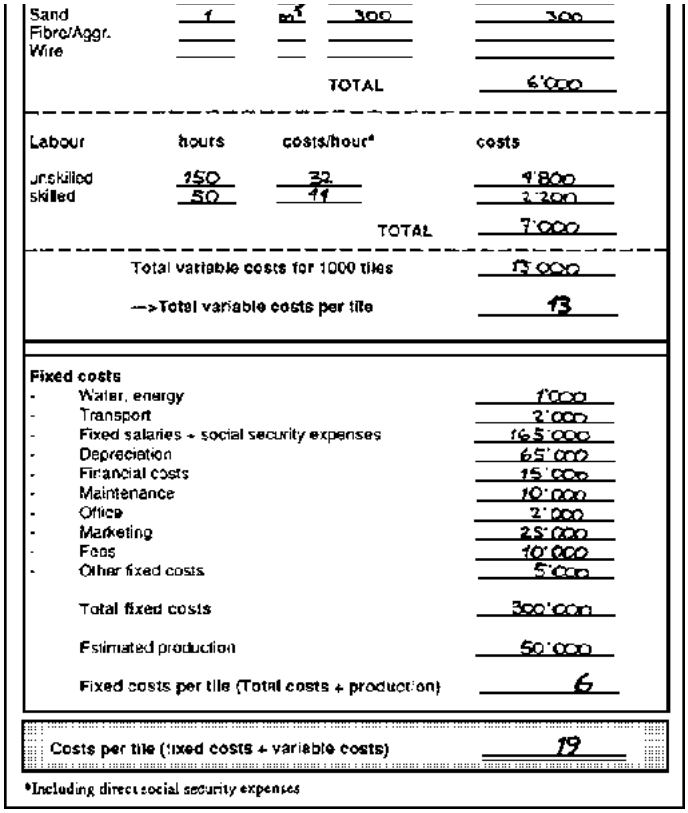
Costs per Tile

Calculation based on figures for the period from 1 Jan to 31 Dec

Estimated production: 50'000

Variable costs per 1'000 tiles

Material	quantity	unit	price/unit	costs
Cement	15	bag	380	5'700



Sand	1	m^3	300	300
Fibre/Aggr.				
Wire				
			TOTAL	6'000

Labour	hours	costs/hour*	costs
unskilled	150	32	4'800
skilled	50	44	2'200
		TOTAL	7'000

Total variable costs for 1000 tiles	13'000
—>Total variable costs per tile	13

Fixed costs	
- Water, energy	1'000
- Transport	2'000
- Fixed salaries + social security expenses	165'000
- Depreciation	65'000
- Financial costs	15'000
- Maintenance	10'000
- Office	2'000
- Marketing	25'000
- Fees	10'000
- Other fixed costs	5'000
Total fixed costs	300'000
Estimated production	50'000
Fixed costs per tile (Total costs ÷ production)	6

Costs per tile (fixed costs + variable costs)	19

*Including direct social security expenses

Figure

Variable Costs

We need to know the *costs per piece.* Sometimes, it would however be rather difficult to

calculate these costs per piece. For that reason, it may be advisable to base the calculation on a certain number of pieces.

Mr. Garcia finds it too difficult to calculate the grammes of cement and minutes of work used to produce one tile. But he knows that with his vibrating table he produces about 1'000 tiles per week. He also knows his raw materials and labour costs for one week. Therefore he bases his variable costs on the raw materials and labour needed to produce a lot of 1'000 tiles.

Step 1

Determine the total costs of the raw materials needed to produce a lot of goods. Please keep in mind: *The same dimension of lot, for example 1'000 tiles, must be used for all variable cost calculations.*

One bag of cement costs LU 380, and one m^3 of sand costs LU 300. To produce 1'000 tiles Mr. Garcia needs:			
•	15 bags of cement	LU	5'700
•	1 m^3 of sand	LU	300
	Total costs for raw materials	**LU**	**6'000**

Step 2

Determine the total labour costs needed to produce the same lot of goods.

It takes one week to produce 1'000 tiles. In Mr. Garcia's workshop there are three workers and one foreman; each of them work 50 hours per week. The workers are I paid LU 32 per hour; the foreman is paid LU 44 per hour.			
•	Wages, foreman (50 × 44)	LU	2'200

•	Wages, workers (3 × 50 × 32)	LU	4'800
	Total labour costs for one week	**LU**	**7'000**

Step 3

Add the raw materials costs and the labour costs together to get the total variable costs of producing one lot of goods.

To produce 1'000 tiles Mr. Garcia needs:			
•	Raw materials	LU	6'000
•	Labour costs	LU	7'000
	Total variable costs:	**LU**	**13'000**

Principally, the expenses for water, energy and transports would make part of the variable costs. However, these costs are small and it would be difficult to determine them even for a whole lot of goods.

For that reason in this example the costs for water, energy and transports are considered to be fixed costs.

Step 4

Divide the total variable costs of producing a whole lot by the number of pieces in a lot to get the total variable costs per piece.

The **variable costs per tile** are: LU 13'000 divided by 1'000 = **LU 13**

Fixed Costs

***Total fixed costs* do not depend on the quantity of goods produced. However, the *fixed costs per piece* do vary with the number of pieces produced. If you only produce and sell one piece per year, all the fixed costs have to be covered by this one piece and the fixed costs per piece would be very high. However, if you produce a great many pieces per year the fixed costs per piece are much smaller.**

Let's assume that the total fixed costs of Mr. Garcia's workshop are LU 300'000 per year.

- If he produces **20'000 tiles per year,** the fixed costs per tile would be (300'000/20'000) = LU 15 and the total costs per tile would be (LU 13 + LU 15) = LU 28.
- If he produces **60'000 tiles per year,** the fixed costs per tile would be (300'000/60'000) = LU 5 and the total costs per tile would be (LU 13 + LU 5) = LU 18.

In the second case, the total costs per tile are only 55% of the total costs per tile of the first case.

As this example clearly demonstrates, the selling price would have to be much higher if production is low - because at low levels of production the fixed costs per piece are high. This leads to the following conclusion:

1. The fixed costs per piece decrease as production increases, and increase as production decreases.

2. The calculation of fixed costs per piece must be based on a certain number of pieces produced in a certain period (normally one year).

The fixed costs per piece are calculated as follows:

Step 5

The time period and the number of pieces produced during the specified time period must be determined.

Mr. Garcia is preparing a costing. He thinks that he will self about 50'000 tiles next year. He decides to base his costing on a period of **one year** and a production volume of **50,000 tiles.**

Step 6

Determine the total fixed costs. A common method of determining costs is to base them on the costs of previous years with some increase added to account for inflation and changes in sales volume.

Last year Mr. Garcia sold 40'000 tiles and had total fixed costs of LU 250'000. This year he plans to sell more tiles. He takes the figures from last year's profit and loss I statement and adjusts them for Inflation and other anticipated increases. For example he knows that he has to pay more taxes and he plans to make an advertising campaign. He estimates that his fixed costs will increase to LU 300'000. To simplify the calculation, the expenses for water, energy and transports are considered to be fixed costs.

Step 7

Divide the total fixed costs by the number of pieces to be produced to get the fixed costs per piece.

Mr. Garcia makes the calculation: LU 300'000/50'000 = **LU 6**

Total Costs

The total costs per piece are the sum of the variable costs per piece and the fixed costs

per piece.

Step 8

Add together the fixed costs per piece and the variable costs per piece.

In Mr. Garcia's case the total costs per tile are: (13 + 6) = **LU 19**

In Appendix A, you will find a calculation exercise. You can use it for your practice.

Pricing

Purpose

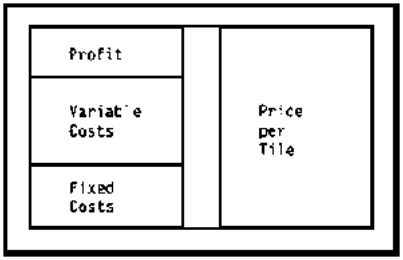
It is very important that the selling price of your goods is correct. If the selling price is too high, nobody will buy your products, because people will buy from cheaper competitors. If the price is too low, you will make a loss, because you will not cover your production costs. The various factors which influence the price must be taken into consideration and then a price must be fixed which optimally fits the situation.

Pricing Factors

The price of a product is mainly determined by its cost and by the market situation:

Costs

The costs of production are the best basis for determining the selling price. The selling price should always be higher than the costs; the difference between costs and selling price is known as profit.



Figure

The higher the selling price, the higher the profit and the greater your gain.

Market

If, however, the selling price of your goods is too high, your customers will buy from your competitors. Or they may use other products. They will for example use rooting materials such as iron sheets or clay tiles.

In Mr. Garcia's workshop the production costs of each tile are LU 19. He hopes to make a profit of LU 3 per tile. Therefore he sets the price per tile at LU 22 (LU 19 + LU 3 = LU 22). If the competitors sell their tiles for more than LU 22, he is in a good position. If the competitors' selling prices are in the range of LU 19 to LU 22 he can lower his price and still make a profit. If, however, the competitors' selling prices are below LU 19 he will be unable to compete with them - and still make a profit. If he sells his tiles for less than his production costs, he will make a loss.

Price - Quantity

The demand for goods might vary strongly with the price. Because of this, it is possible for a small price reduction to lead to a big increase in sales. It is often better to sell many pieces at a low price rather than to sell a few pieces at a high price. A cost calculation will

quickly show which alternative is best.

The variable costs per tile are considered to be LU 13 and the total fixed costs are LU 300'000 per year. Now let's analyse two cases:

- **Selling 30'000 tiles per year**
  - The fixed costs per tile are 300'000/30'000 = LU 10
  - Total costs per tile are 13 + 10 = LU 23

  The selling price should thus be at least **LU 23.**
- **Selling 60'000 tiles per year**
  - The fixed costs per tile are 300'000/60'000 = LU 5
  - Total costs per tile are 13 + 5 = LU 18

  The selling price has to be at least **LU 18.**

If the market price is LU 21 per tile, Mr. Garcia would make a loss if he produced only 30'000 tiles. However, if he produces and sells 60'000 tiles at LU 20 each, he will make a profit. **But this is only true, on condition that, he can sell all these 60'000 tiles.**

In the 'Financial Analysis' section you will learn how to calculate the 'breakeven point'. The 'breakeven point' is the exact level of production, at a given price, where you make no profit and no loss - that is the point at which the costs of production and the selling price are 'even'.

Reducing Costs

When production costs are higher than the selling price, you have the following possibilities:

- **Reduce costs. Can you find a supplier of raw materials who will give you a better price? Can you employ less workers or increase the productivity of your existing workers?**

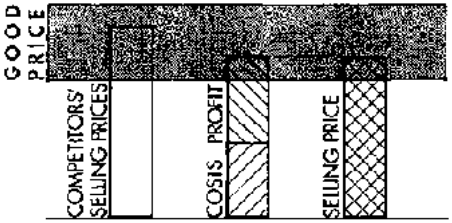
- **Make different or additional products with a better cost - price relation. Can you for example change your tiles so that they are a special colour, unique shape or a different form? Do they have a better cost - price relation?**

- **Produce more. Can you produce and sell more goods and benefit from the lower fixed costs per piece?**

Conclusion

Please never forget the following rule:

The selling price should be higher than the production costs, but low enough so that the price is attractive to your customers and competitive with other producers and other products.



Figure

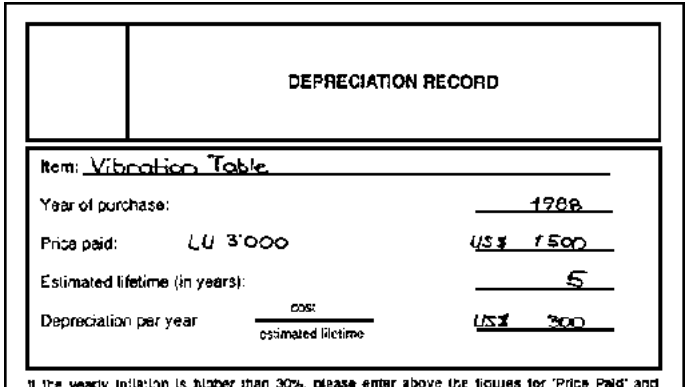
Appendix A: Exercise in Costing

1. Depreciation Calculation

In January 1988, Mr. Garcia bought a new vibration table for LU 3'000. The lifetime of the table is estimated to be 5 years. The inflation is about 50% per year. For that reason, Mr. Garcia decides to calculate the depreciation in US$. The exchange rates to the US$ were the following:

- 1 Jan 88: 2.00
- 31 Dec 88: 3.00
- 31 Dec 89: 4.50
- 31 Dec 90: 7.00
- 31 Dec 91: 10.50
- 31 Dec 92: 16.00

Please determine the depreciation amount in local currency for the 31st of December of the years 1988, 1989, 1990, 1991 and 1992. On the next page, you find the answer.



DEPRECIATION RECORD

Item: Vibration Table

Year of purchase: 1988

Price paid: LU 3'000 US$ 1500

Estimated lifetime (in years): 5

Depreciation per year: cost / estimated lifetime = US$ 300

If the yearly inflation is higher than 30%, please enter above the figures for 'Price Paid' and

'Depreciation per year' in US$ and use the table below to calculate the yearly depreciation in your local currency.

Year	Exchange rate to US$	Depreciation amount in local currency	Commentary (maintenance, condition etc.)
1988	3.00	900	
1989	4.50	1'350	
1990	7.00	2'100	
1991	10.50	3'150	
1992	16.00	4'800	

Figure

2. Costs Calculation

Calculate the production costs per tile, based on the following figures:

- **All costs are given in LU (Local Units of currency). Variable costs calculations are based on the costs of producing 1'000 tiles. All figures are based on the period from the 1st of January to the 31st of December 1992.**

- **20 bags of cement and 1 m^3 of sand are needed to produce 1'000 tiles. One bag of cement costs LU 300. One m^3 of sand costs LU 280.**

- **There are three workers and one foreman. They produce 1000 tiles in one week (40 working hours). The workers are paid LU 30 per hour. The foreman is paid LU 40. Social security costs, paid by the business, are an additional 10% of the wages.**

- **All fixed costs are based on estimates for one year. Mr. Garcia expects to produce 50'000 tiles per year.**

- **Mr. Garcia estimates that his yearly fixed costs will be:**

  - **Water and energy: LU 1'000,**

  - **Transports: LU 2'000,**

  - **Mr. Garcia will pay himself a monthly salary of LU 5'000. In addition there will be social security costs of 10% of his salary,**

  - **Mr. Garcia's records give the following information needed to calculate depreciation:**

    - The buildings cost LU 150'000. They will last for ten years,
    - Equipment costs LU 300'000. It will last for five years,

  - **Mr. Garcia has a bank loan of LU 100'000. The yearly interest rate is 18%,**

  - **Maintenance: LU 20'000,**

  - **Office expenses: LU 2'000,**

- **Marketing: LU 40'000,**
- **Fees: LU 16'000,**
- **Other fixed costs: LU 10'000.**

The following page has a few hints to help you find the answer.

Hints

- **Wages, salary and social security expenses**

The social security expenses should be added to the hourly wage of the workers and the foreman.

10% of LU 30 = LU 3. Therefore, the total wage per hour is LU 30 + LU 3 = LU 33. Mr. Garcia bases his calculation of variable costs per tile on the costs of producing 1'000 tiles. It takes three workers one week or 3 × 40 = 120 hours to produce 1'000 tiles. Therefore, the weekly amount of wages is:

3 (number of workers) × 40 (hours per week) × LU 33 (wage per hour) × = **LU 3'960**

The social security expenses should be added to the monthly salary of Mr. Garcia.

10% of LU 5'000 = LU 500. Therefore, the total salary per month is:

(LU 5'000 + LU 500) = **LU 5'500**

A monthly salary must be multiplied by 12 to get the yearly salary (because there are 12 months in a year).

- **Depreciation**

To determine the yearly depreciation, divide the costs of each investment by its lifetime.

The investment costs of Mr. Garcia's building was LU 150'000. The building will last ten years. Therefore, the depreciation per year is the investment costs divided by the life of the investment:

LU 150'000 (investment)/10 (lifetime in years) = **LU 15'000** (depreciation per year)

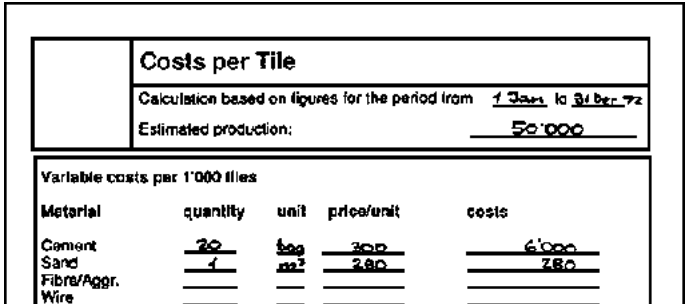
To determine the total yearly depreciation for all investment items add together the yearly depreciation for each investment item.

- **Financial Costs**

The financial costs are the yearly loan interest.

In Mr. Garcia's case the yearly interest is determined by multiplying the amount of the loan by interest rate:

LU 100'000 (loan) × 0.18 (interest rate/100) = **LU 18'000** (yearly interest)



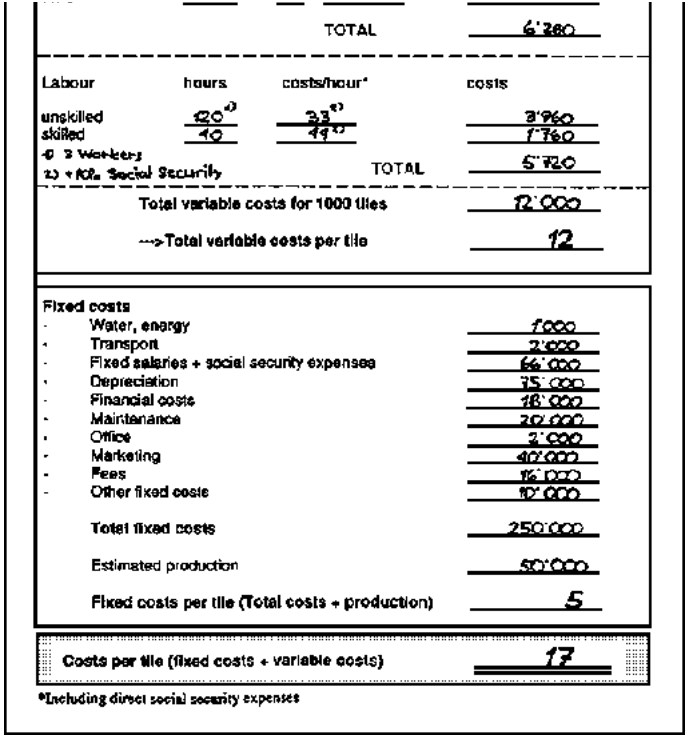
Costs per Tile

Calculation based on figures for the period from 1 Jan to 31 Dec 72

Estimated production: 50'000

Variable costs per 1'000 tiles

Material	quantity	unit	price/unit	costs
Cement	20	bag	300	6'000
Sand	1	m³	280	280
Fibre/Aggr.				
Wire				



		TOTAL	6'280
Labour	hours	costs/hour*	costs
unskilled	120	33	3'960
skilled	40	44	1'760
-0 2 Workers			
2) + 10% Social Security		TOTAL	5'720
		Total variable costs for 1000 tiles	12'000
		--->Total variable costs per tile	12
Fixed costs			
-	Water, energy		1000
-	Transport		2'000
-	Fixed salaries + social security expenses		66'000
-	Depreciation		75'000
-	Financial costs		18'000
-	Maintenance		20'000
-	Office		2'000
-	Marketing		40'000
-	Fees		16'000
-	Other fixed costs		10'000
	Total fixed costs		250'000
	Estimated production		50'000
	Fixed costs per tile (Total costs ÷ production)		5
	Costs per tile (fixed costs + variable costs)		17

*Including direct social security expenses

Figure

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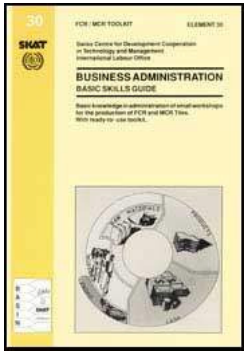


Business Administration - Basic Skills Guide (SKAT, 1994, 162 p.)

Module 5: Profit and Loss Statement

Profit and Loss Statement

Goal

This module explains, what a profit and loss statement is used for and how it is made.

Purpose

As long as there is some cash, a business will live. But after a certain time of loss, the business will cease to exist, because all the money will be used up. Please keep in mind:

1. Cash and profit are not the same thing.
2. There is no direct relationship between cash and profit.

Therefore, it is not enough to control the cash of your business, you need to know, whether your business is making a profit or not.

The cash book tells you, how much cash you have in your cash box. The profit and loss statement is used to determine how much profit (or loss) your business has made. If you

have a cash book and a profit and loss statement you can clearly see how much of your cash really is profit (see Appendix B for further information).

Concept

The following formula shows the basic structure and components of the profit and loss statement:

Sales
- Costs of Goods Sold
= Gross Profit (or Loss)
- Expenses
= Net Profit (or Loss)
- Withdrawals
= Retained Profit (or Loss)

There are three different types of profit: gross profit, net profit, and retained profit. For the business person net profit is important because it shows how much can be withdrawn from the business. For the business the retained profit is important because it shows how much of the profit is available to expand the business *after* the owner or partners have withdrawn their share.

Goods Sold

The costs of goods sold means the total cost of all materials which make part of the products sold during a given period. Therefore costs of goods sold might be costs of all raw materials.

If you only do one profit and loss statement per year and do not need exact figures, this definition will do. Normally, however, the profit and loss statement is done every one to three months. Within this period the amount of raw materials bought does not correspond exactly to the amount of raw materials used. For example, the cement bought in one month may be sufficient for the following three months. The costs of goods sold would be high in one month and low in the next months, even though the same amount of raw materials was used every month. This effect distorts the result of the profit and loss statement. For that reason, changes in stock should be taken into account:

> **If the stocks of raw materials are reduced in one period, this is considered to be costs.**

The following formula shows how to calculate a more accurate costs of goods sold:

Raw Materials at the Beginning
+ Raw Materials Purchased During the Period
= Raw Materials Available for Production
- Raw Materials Remaining at the End of the Period
= Costs of Goods Sold

Expenses

All the other costs of production are called expenses. They include:

- **Wages and salaries,**
- **Social security expenses,**
- **Water and energy,**
- **Transports,**

- **Marketing,**
- **Maintenance,**
- **Rent,**
- **Depreciation,**
- **Taxes and fees,**
- **Interest on loans.**

Attention

The following two points are very important and must not be forgotten:

- Money spent on investments is ***not*** an expense, but depreciation ***is.***
- Loan repayments are ***not*** expenses, but loan interest ***is.***

Investments and loan repayments are normally irregular and large. They would distort the result of the profit and loss statement. For that reason, depreciation and loan interest are used in the profit and loss statement.

Basic Formula

The basic formula needed to calculate profit and loss is:

+ Total sales
+ Final value of stock
- Initial value of stock
- Purchase of raw materials
= Gross profit
- Working costs (wages, salaries and social expenses)

- Working costs (wages, salaries and social expenses)
- Production inputs (water, energy, consumables)
- Overheads (transports, office, marketing, maintenance, taxes and fees, interests)
- Depreciation (buildings and equipment)
= Net profit (or loss)
- Withdrawals
= Retained profit (or loss)

An Example of a Profit and Loss Statement

Introduction

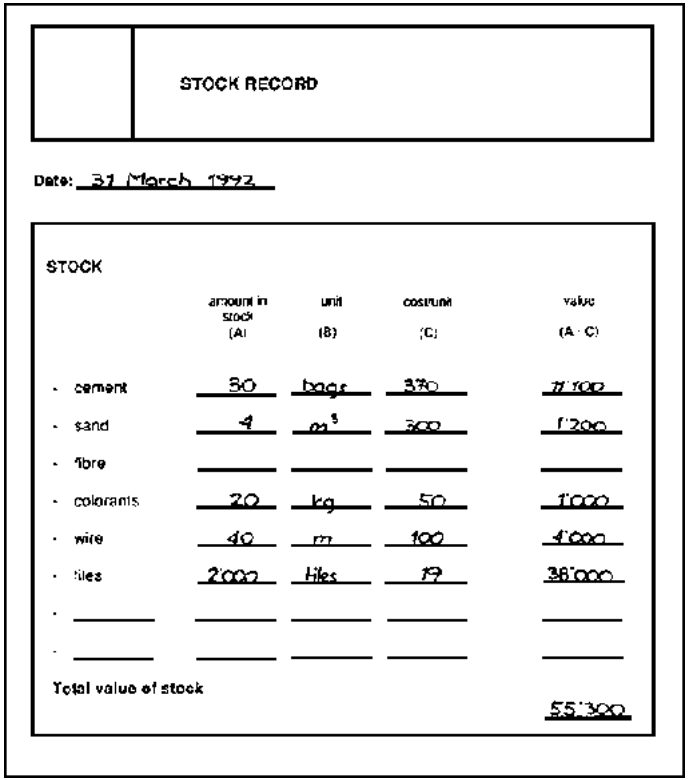
A profit and loss statement should be prepared monthly, quarterly or annually. The information shown in the profit and loss statement is obtained from three sources:

- **The Stock Record format gives the data for initial and final value of stock.**
- **The depreciation figures are found in the Depreciation Summary.**
- **All the other figures are found in the Cash Book.**

These three sources are illustrated below.

Value of Stock

The value of stock is taken from the stock record.



STOCK RECORD

Date: 31 March 1992

STOCK

	amount in stock (A)	unit (B)	cost/unit (C)	value (A · C)
· cement	50	bags	370	18'500
· sand	4	m^3	300	1'200
· fibre				
· colorants	20	kg	50	1'000
· wire	40	m	100	4'000
· tiles	2'000	tiles	19	38'000
·				
·				

Total value of stock 55'300

Figure

The following points are important:

- **The value of stock has to be determined at the beginning *and* at the end of each accounting period. Normally, the beginning of one period is the same as the end of**

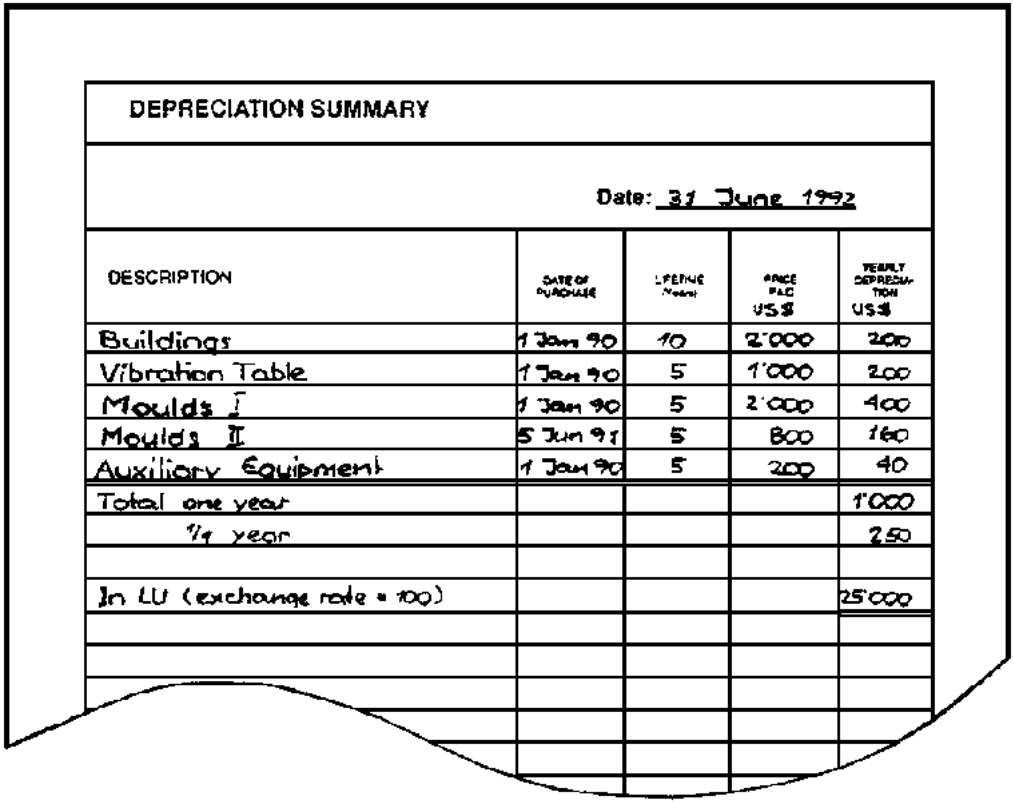
the previous period.

In Mr. Garcia's Stock record from the 31st of March shown above, the "total value of stock" is the **final value of stock** on 31.3.92 (at the end of the First Quarter of 1992). Therefore, the same amount will be the **initial value of stock** on 1.4.92 (at the start of the Second Quarter of 1992).

- **Make sure that the value is based on the *actual costs* for raw materials as well as for final products. To determine the "costs/unit" of the raw materials, consult the invoices of the most recent deliveries. The costs per piece of final product has to be calculated as shown in Module 4, "Costing and Pricing".**

Depreciation

The method for calculating the depreciation of buildings and equipment is described in the Module 4, "Costing and Pricing". The amount shown in the profit and loss statement is based on the total in the "Depreciation Summary":



DEPRECIATION SUMMARY

Date: 31 June 1992

DESCRIPTION	DATE OF PURCHASE	LIFETIME (Years)	PRICE P.U. US$	YEARLY DEPRECIATION US$
Buildings	1 Jan 90	10	2'000	200
Vibration Table	1 Jan 90	5	1'000	200
Moulds I	1 Jan 90	5	2'000	400
Moulds II	5 Jun 91	5	800	160
Auxiliary Equipment	1 Jan 90	5	200	40
Total one year				1'000
1/4 year				250
In LU (exchange rate = 100)				25'000

Figure

Attention

The Depreciation Summary shows the depreciation as calculated *per year.* Remember, all

calculations must be for the same period. If the profit and loss statement is made for three months, the amount of depreciation is only *one forth* of the total amount of the yearly depreciation shown in the Depreciation Summary.

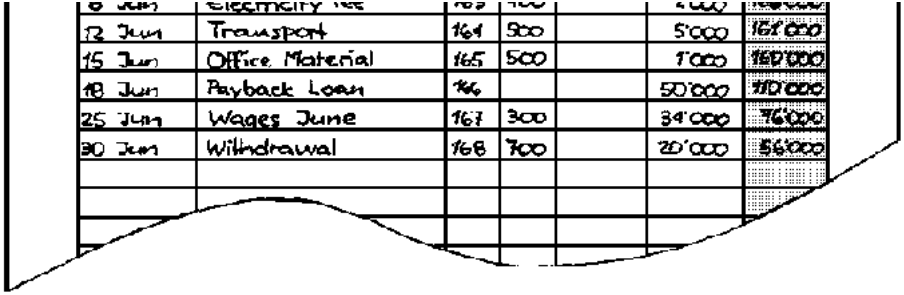
Cash book

The cash book is already known from Module 3, "Cash Management":

CASH BOOK

YEAR 1992 SHEET NO. 2

DATE	ITEM	VOUCHER NO.	CODE OF ACCOUNT	CASH IN	CASH OUT	BALANCE
1 Apr	Starting cash					80'000
5 Apr	Tiles Brown	153	100	110'000		190'000
10 Apr	200 Bags of Cement	154	200		75'000	115'000
12 Apr	12 m³ of Sand	155	200		3'000	112'000
18 Apr	Plastic Sheets	156	400		1'000	111'000
21 Apr	Tiles Grey	1251	100	120'000		231'000
25 Apr	Wages April	157	300		30'000	201'000
9 May	Advertising	158	500		10'000	191'000
13 May	Repair of Table	138	500		5'000	186'000
17 May	Water Fee	159	400		1'000	185'000
19 May	New Moulds	160			90'000	95'000
22 May	Colorants	161	200		45'000	50'000
25 May	Wages May	162	300		32'000	18'000
3 Jun	Tiles Housing & Co.	1252	100	150'000		168'000



12 Jun	Transport	164	900		5'000	161'000
15 Jun	Office Material	165	500		1'000	160'000
18 Jun	Payback Loan	166			50'000	110'000
25 Jun	Wages June	167	300		34'000	76'000
30 Jun	Withdrawal	168	700		20'000	56'000

Figure

Calculation

The profit and loss statement is now made as follows (for an example see next page):

Step 1

Decide on the time period, for which you need to make the profit and loss statement. If there is no inflation and your business is doing well, once per year is enough. If you have a lot of changes in quantities, costs and prices or if you frequently have a lack of cash, then the profit and loss statement should be prepared monthly or quarterly.

Mr. Garcia decides to prepare a profit and loss statement quarterly.

Step 2

Determine the value of stock at the beginning and at the end of the period. Fill in the figures in the profit and loss statement.

Above, you can see the format. Mr. Garcia filled in on the 31st of March. The stock has a value of

Above, you can see the format, Mr. Garcia filled in on the 31st of March. The stock has a value of LU 55'300. On the 30th of June, Mr. Garcia determines once more the value of his stock and finds out that it is LU 71'900.

Step 3

The "Depreciation Summary" may help to determine the depreciation. Determine the depreciation for the time period and, if necessary, calculate it in LU. Then fill the figure in the profit and loss statement.

Mr. Garcia has to depreciate $ 1'000 per year. Per quarter of a year, he has to depreciate one forth, that is $ 250. By the end of June 1992, the exchange rate is 100. That means, for one dollar, LU 100 has to be paid. Therefore, the $ 250 are the same as LU 25'000.

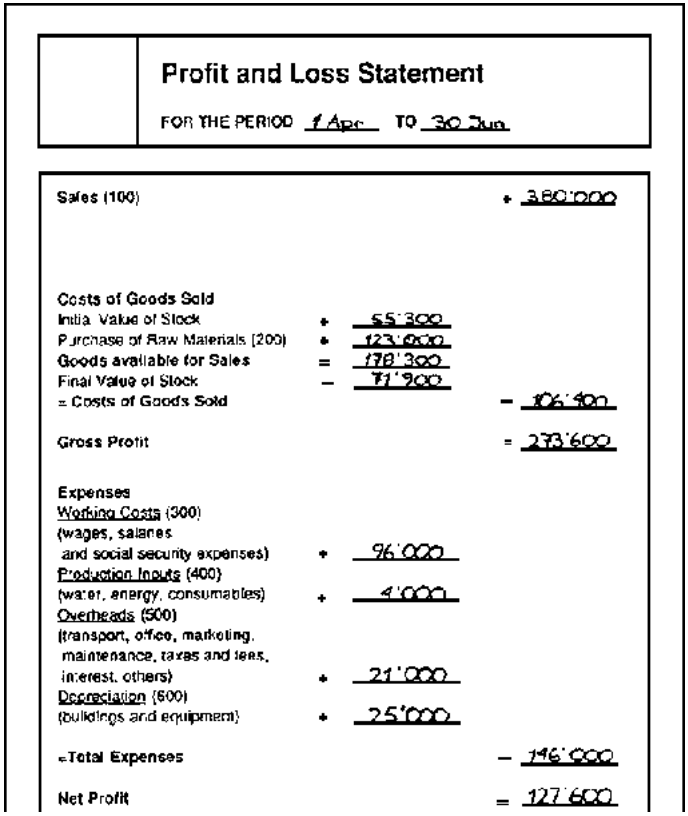
Step 4

Now take the cash book. Within the calculation period of the statement, all cash transactions with a certain code are added up and the result is entered into the corresponding field of the statement. This is done with all the codes of the statement.

Mr. Garcia takes the cash book and starts with the first code **100** for **sales.** He finds three entries corresponding to that code: Tiles for Mr. Brown at the 5th of April, Tiles for Mr. Grey on the 21th of April and tiles for Housing and Co. on the 3rd Of June. The total amount of sold tiles is 110'000 + 120'000 + 150'000 = LU 380'000. He enters the figure into the profit and loss statement. Then he takes the next code, **200, raw materials,** and again finds three entries in the cash book. He adds up the entries and enters the total (LU 123'000) into the profit and loss statement. He does so with all other codes. Only two entries of the cash book are not taken into account: The investments (new moulds on the 19th of May) and the pay back of loans (on the 18th of June). The **net profit**

is LU 127'600. Mr. Garcia decides to withdraw LU 20'000. The **retained profit** therefore is LU 107'600.

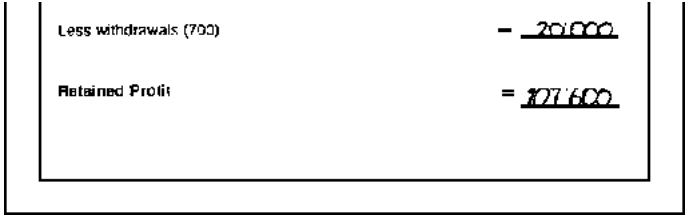
The corresponding profit and loss statement looks now as follows:



Profit and Loss Statement

FOR THE PERIOD 1 Apr TO 30 Jun

Sales (100)			+ 380'000
Costs of Goods Sold			
Initia Value of Stock	+	55'300	
Purchase of Raw Materials (200)	+	123'000	
Goods available for Sales	=	178'300	
Final Value of Stock	–	71'900	
= Costs of Goods Sold			– 106'400
Gross Profit			= 273'600
Expenses			
Working Costs (300) (wages, salaries and social security expenses)	+	96'000	
Production Inputs (400) (water, energy, consumables)	+	4'000	
Overheads (500) (transport, office, marketing, maintenance, taxes and fees, interest, others)	+	21'000	
Depreciation (600) (buildings and equipment)	+	25'000	
=Total Expenses			– 146'000
Net Profit			= 127'600



Figure

Attention

Not all of the figures from the cash book are used for the profit and loss statement. The following cash transactions are ***not*** used to calculate profit and loss:

- Investments (for example, "New Moulds".),
- Loan Repayments.

How to analyse the result of the profit and loss statement is explained in the next module (module 6: "Financial Analysis").

Appendix A is an exercise for your practice.

Appendix A: Exercise in Profit and Loss Statement

Mr. Garcia decides on preparing a profit and loss statement for the first quarter of 1992. For that reason he is looking for the figures needed to do so:

1. Value of Stock

On the 1st of January Mr. Garcia counts his stocks. He has the following raw materials:

- **20 bags of cement,**
- **10 m^3 of sand,**
- **50 kg of colorants,**
- **20 m of wire,**
- **1'000 tiles.**

Next, Mr. Garcia checks his records to find out how much he paid for each item:

- **He paid LU 80'000 for 200 bags of cement,**
- **He paid LU 6'000 for 12 m^3 of sand,**
- **Each kg of colorant costs LU 100,**
- **100 m of wire cost LU 5'000.**

Using this information Mr. Garcia determines that it cost LU 18'000 to produce 1'000 tiles.

What is the value of Mr. Garcia's stock on the 1st of January? To find the answer to this question, make a copy of the Stock Record Format, and use the figures given above. Below, you will find the answer.

Now, make a copy of the Profit and Loss Statement Format and enter the figure in the field "Initial Value of Stock".

Mr. Garcia also determines the stock on the 31st of March and finds that it is LU 20'000. Please enter this figure in the field "Final Value of Stock" in the profit and loss statement.

2. Depreciation of Equipment and Workshop

Description	Value ($)	Yearly Depreciation ($)

Description	Value ($)	Yearly Depreciation ($)
Site/Buildings	3'000	200
Equipment	1'000	400

What is the yearly and quarterly depreciation, when the exchange rate is 100? Please enter the figure for the quarterly depreciation into the profit and loss statement in the field "Depreciation".

3. Cash Transactions

Please prepare a cash book for Garcia's Tile Factory. Enter the following cash transactions in the cash book and determine the transaction codes used for the profit and loss statement.

Remember: Investments and repay of loans are *not* expenses and, therefore, do *not* make part of the profit and loss statement.

- **On the 1st of January there are LU 60'000 in the cash box.**
- **On the 5th of January Mr. Garcia buys plastic sheets for LU 5'000. The voucher number is 101.**
- **On the 10th of January Mr. Brown pays last year's invoice. The amount is LU 100'000 and the invoice number is 356.**
- **On the 15th of January 200 bags of cement are delivered. Mr. Garcia pays LU 75'000. The invoice number is 102.**
- **On the 25th of January Mr. Garcia pays his workers: LU 30'000. The voucher number is**

103.

- **On the 3rd of February, Mr. Garcia buys office material for LU 2'000. The voucher number is 104.**

- **On the 7th of February, Mr. Garcia starts an advertising action in the newspaper "Daily Mail" and pays LU 18'000. The invoice number is 105.**

- **On the 12th of February, Mr. de Rivero fetches his tiles and pays LU 150'000. The invoice number is 106.**

- **On the 18th of February, Mr. Garcia pays LU 5'000 for transport. The invoice number is 107.**

- **On the 21st of February, new moulds are delivered. Mr. Garcia pays LU 70'000. The invoice number is 108.**

- **On the 25th of February, Mr. Garcia pays his workers: LU 30'000. The voucher number is 109.**

- **On the 28th of February, Mr. Domingues pays LU 100'000 for tiles he received. The invoice number is 110.**

- **On the 8th of March, 20m^3 of sand are delivered. They cost LU 5'000. The invoice number is 111.**

- **On the 11th of March, Mr. Garcia pays for the repair of his vibrating table LU 10'000. The invoice number is 112.**

- **On the 17th of March, Mr. Garcia has to pay the water fee of LU 10'000. The invoice number is 113.**

- **On the 25th of March, Mr. Garcia pays his workers: LU 30'000. The voucher number is 114.**

- **On the 30th of March, the interest for the first quarter has to be paid: LU 15'000. The invoice number is 115.**

- **On the 31st of March, Mr. Garcia decides to draw LU 20'000. The voucher number is 116.**

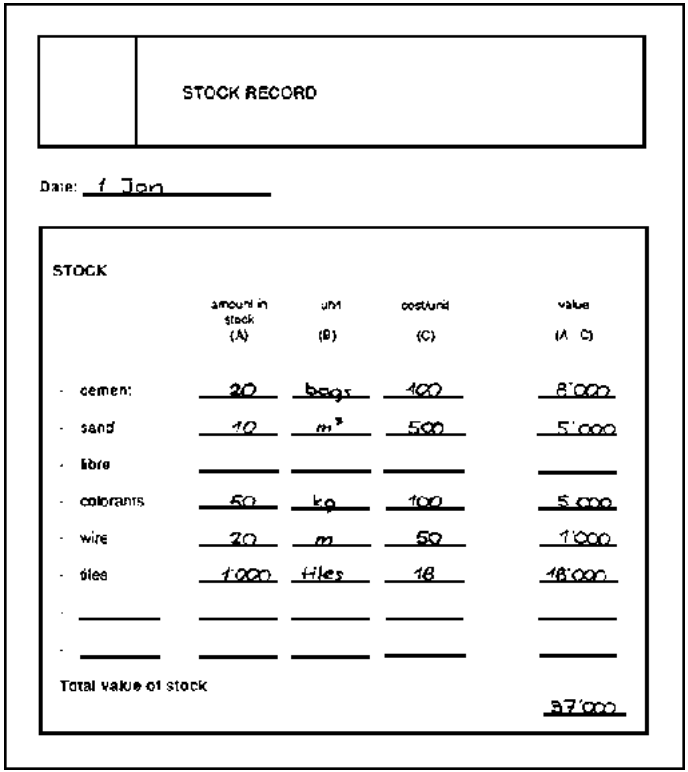
4. Profit and Loss Statement

Please prepare now the profit and loss statement for Garcia's Tile Factory for the period from the 1st January to the 31st of March.

All the information you need to prepare the profit and loss statement is given above.

5. Answers to the Exercises

a. Stock Record



STOCK RECORD

Date: 1 Jan

STOCK

	amount in stock (A)	unit (B)	cost/unit (C)	value (A · C)
- cement:	20	bags	400	8'000
- sand	10	m^3	500	5'000
- fibre				
- colorants	50	kg	100	5 000
- wire	20	m	50	1'000
- tiles	1'000	tiles	18	18'000
-				
-				

Total value of stock 37'000

Figure

b. Depreciation

The total yearly depreciation is $ 600. The quarterly depreciation is one forth of that:

$$quarterly depreciation = \frac{yearly depreciation}{4} = \frac{600}{4} = LU\ 150$$

With an exchange rate of 100, the quarterly depreciation is 150 × 100 = LU 15'000. This figure is entered into the profit and loss statement.

c. Cash Book

CASH BOOK

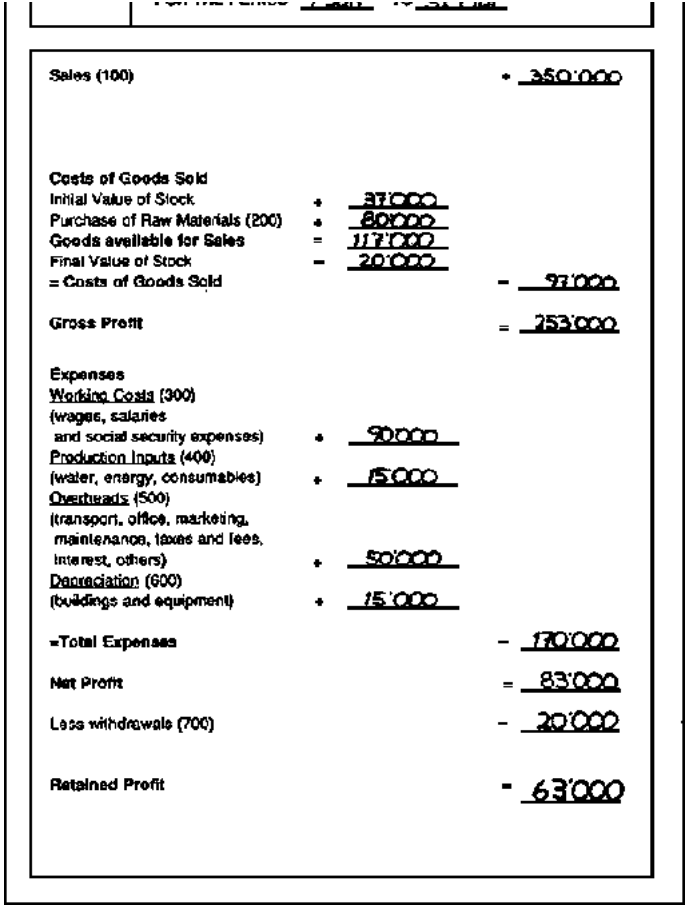
YEAR 1992 SHEET NO. 1

DATE	ITEM	VOUCHER NO.	CODE OF ACCOUNT	CASH IN	CASH OUT	BALANCE
1 Jan	Starting cash					60'000
5 Jan	Plastic Sheets	101	400		5'000	55'000
10 Jan	Tiles Mr. Brown	356	100	100'000		155'000
15 Jan	200 Bags of Cement	102	200		75'000	80'000
25 Jan	Wages	103	300		30'000	50'000
3 Feb	Office Material	104	500		2'000	48'000
7 Feb	"Daily Mail"	105	500		18'000	30'000
12 Feb	Tiles Mr. de Rivero	106	100	150'000		180'000
18 Feb	Transport	107	500		5'000	175'000
21 Feb	New Moulds	108			70'000	105'000
25 Feb	Wages	109	300		30'000	75'000
28 Feb	Tiles Mr. Domingues	110	100	100'000		175'000
8 Mar	20 m^3 of Sand	111	200		5'000	170'000

11 Mar	Repair Vibration Table	112	500		10'000	160'000
17 Mar	Water Fee	113	400		10'000	150'000
25 Mar	Wages	114	300		30'000	120'000
30 Mar	Interest	115	500		15'000	105'000
31 Mar	Withdrawal	116	700		20'000	85'000
	TOTAL			350'000	325'000	

Figure

d. Profit and Loss Statement



Sales (100)			+ 350'000
Costs of Goods Sold			
Initial Value of Stock	+	37'000	
Purchase of Raw Materials (200)	+	80'000	
Goods available for Sales	=	117'000	
Final Value of Stock	−	20'000	
= Costs of Goods Sold			− 97'000
Gross Profit			= 253'000
Expenses			
Working Costs (300) (wages, salaries and social security expenses)	+	90'000	
Production Inputs (400) (water, energy, consumables)	+	15'000	
Overheads (500) (transport, office, marketing, maintenance, taxes and fees, interest, others)	+	50'000	
Depreciation (600) (buildings and equipment)	+	15'000	
=Total Expenses			− 170'000
Net Profit			= 83'000
Less withdrawals (700)			− 20'000
Retained Profit			= 63'000

Figure

Appendix B: The Difference between Cash and Profit

1. The Question

In appendix A you find an exercise, where you make a profit and loss statement from a stock record, the depreciation summary and the cash book. There you find the following figures:

- **The Retained Profit from the 1st January to 31st March is LU 63'000**
- **The Cash on Hand in the Cash Box on 31st March is LU 85'000**

Question: Where does this difference come from?

2. Where the Difference Comes From

The difference between cash and profit can be explained by the following:

- **Investments ("new moulds") reduce the cash, but they are not expenses. Investments are irregular and large cash transactions. If they were included in the expenses, the result of the profit and loss statement would be distorted.**

- **Depreciation is an expense but it does not reduce cash.**

- **Loan Repayments reduce cash, but they are not expenses. Loan repayments are irregular and large cash transactions. If they were included in the expenses, the result of the profit and loss statement would be distorted. However, the *costs* of loans are taken into consideration. The loan interest is an expense (and also reduces cash).**

- **Changes in the value of stock change the profit but do not change cash.**

3. Example

In the case of Garcia's tile factory, the difference between cash and profit can be explained by the following calculations:

Final Cash		**+ 85'000**
Less: Initial cash (On the 1st of January)	- 60'000	
= Cash difference between 1.1. and 31.3.		**+ 25'000**
Plus: Investments (reduced cash, but not profit)	+ 70'000	
Less: Depreciation (reduced profit, but not cash)	- 15'000	
Less: Stock Changes (reduced profit, but not cash)	- 17'000	
= Retained Profit		**63'000**

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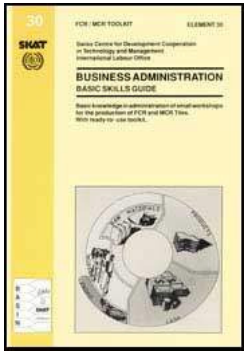

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Module 6: Financial Analysis

Introduction

Goal

This module explains, how to analyse and interpret the figures from the profit and loss statement and how to determine and analyse the breakeven point.

Purpose

Good decisions are necessary to manage a business successfully. Good decisions are based on the analysis of information about the business itself, the local and national economy, and the market potential for your products. Your books and records provide part

of the information about the state of the business, namely, basic financial information. This section tells you how to analyse and interpret financial information about your business.

Profit and Loss Statement

Purpose

Module 5, "Profit and Loss Statement", explained how to calculate profit. But why should you make a profit? And what information can you draw from a profit and loss statement?

After you have analysed the profit and loss statement, you should be able to identify and understand your financial problems.

Why Profit?

Even if a business makes a loss every year, it may still live as long as there is cash. But only for a certain time, because all money initially invested for workshop and equipment will be used up and there will be no money left to replace old equipment or to expand the workshop. After a certain time of loss, the business will even cease to exist, namely then, when all the money is used up. But there are also other reasons for making a profit.

- **Loan repayments,**
- **Unexpected costs and emergencies,**
- **Cash reserve for when business is slack,**
- **Business expansion,**
- **Income for you and your family.**

Profit is necessary for the survival of the business

What is profit?

Generally speaking, profit is the difference between income (= gross profit) and costs (= expenses).

Figure

The higher the income is, compared to the costs, the higher the profit. Normally, income and costs are not stable, they change all the time. If, for example, the income increases and the costs stay stable, the profit will increase. If, on the other hand, the income stays stable and the costs increase, the profit becomes smaller or even turns to a loss.

Costs should be kept as low as possible. It is important to analyse costs whenever they increase. Income should be as high as possible. Decreasing income should be analysed carefully.

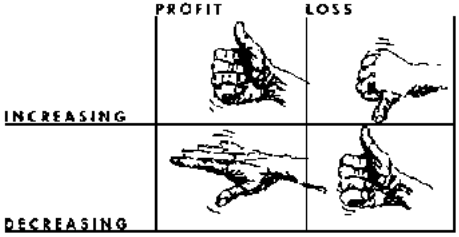
Analysis

The Analysis is made in three steps:

Step 1

What trend has profit/loss?

Make an actual profit and loss statement. Is there a profit or a loss? Is it higher or lower compared to earlier profits/losses? Is there a trend over the last periods? If there is an increasing loss, you are in a very bad situation. If there is a loss, but losses becoming smaller every period, you still are in a bad, but improving situation. If there is a profit, but profits are becoming smaller every period, you should carefully analyse your situation. Only if there is an increasing or at least stable profit, you are in a good position.



Figure

In the last quarter Mr. Garcia made a profit of LU 63'000. He is satisfied with this profit. But he recognizes with sorrow that the profit is becoming smaller from period to period.

Step 2

What trend has sales income?

Use the last three to five profit and loss statements and compare the figures for sales income. What general trends do you see? Are sales increasing or decreasing? What types of good had increasing or decreasing sales? Did customer preferences change? Were your prices too high? Was a certain type of good of poor quality?

Figure

Income from tile sales was as follows: The turnover of gray tiles steadily decreased because in Mr. Garcia's town they are too expensive for low cost housing. The turnover of red and traditional tiles, however, was increasing as a result of NGOs and wealthier people buying these types of tiles. Mr. Garcia could sell much more red tiles if he could produce enough of them. But in the past, he could never produce enough tiles, because his untrained workers had a low productivity and wasted raw material.

Step 3

What trends have costs?

Use the last three to five profit and loss statements and compare the figures for costs. What general trends do you see? Are costs increasing or decreasing? Which prices and costs are increasing faster than others? Was there a loss or waste of raw materials? Did you need more raw material because of poor quality?

Figure

The raw material prices increased. This can be explained by increases in the price of cement. An analysis of cement prices from several suppliers shows that although the cement price rose generally, Mr. Garcia's supplier's price was always 15% higher than that of other suppliers.

Improve Profit

If there is a loss or a decreasing profit, the question arises, how the profit could be improved.

Step 4

How do you improve the situation?

There are four basic ways to improve the situation:

1. Decrease costs

Costs should be as low as possible. You should use every chance to cut your costs. In Module 4, "Costing and Pricing", you may find some ideas, how to do so.

2. Increase sales

When you increase your sales through a marketing effort, you must also increase your production. With higher production levels, fixed costs such as administration, management, marketing, depreciation and interest normally remain stable, resulting in a *decrease in the fixed costs per piece* and an *increase in the profit per piece* (see Module 4, "Costing and Pricing").

3. Increase the price

If you increase your prices while your costs remain stable, your profits will increase. However, before increasing your prices, you must make sure that your prices remain competitive in the market and that you are still able to sell all the tiles you produce.

4. Change the product

Another product or changes in the actual product, such as new colours, unique shapes and original designs may make the product more attractive to customers and they may be willing to pay more for it. Moreover, there may be less competition for other or changed products. You may sell more products at a higher price.

It depends on the situation which strategy is the best. In some cases, even a combination of two or more strategies may be required.

Mr. Garcia thinks about his possibilities to improve the situation.

- Mr. Garcia decides to stop the production of gray tiles for a moment and to increase the production of red tiles.
- Mr. Garcia decides to send his workers into a training course for tile producers in order to improve their productivity. He also decides to change his foreman and to hire one experienced in producing tiles.
- Mr. Garcia decides to look for a cheaper supplier for cement to decrease his raw material costs.

Break-Even Point

Purpose

The profit not only depends on the price but also on the quantity of goods sold. If you are able to produce and sell much more goods than before, the profit may be higher even if you sell your goods at a much lower price. But what quantity of goods do you have to produce and to sell at a given price to be profitable? How is the relation between quantity, price and profit?

Definition

The key to understand the relation between quantity, price and profit are the fixed costs. They stay stable when you produce more goods, but the fixed costs per good will decrease.

Suppose your fixed costs (consumables, administration, maintenance, depreciation, interest, etc.) per year are LU 10'000 and the variable costs (workers, raw material) are LU 1 per tile. When you produce 1'000 tiles per year, each tile has to cover LU 10 of the fixed costs (LU 10 × 1'000 tiles = LU 10'000). Thus, the production of each tile costs you LU 11 (fixed costs per tile + variable costs per tile). Now suppose, your customers are prepared to pay LU 2 per tile. HOW many tiles do you have to produce and sell each year, at a selling price of LU 2, just to cover all your costs? The variable costs per tile still are LU 1. So another LU 1 is left to pay for the fixed costs. Therefore, you have to sell 10'000 tiles to cover the LU 10'000 fixed costs. When you sell 10'000 tiles, your costs and your Income will be LU 20'000.

At the break-even-point, the total income is the same as your total costs - you make neither a loss nor a profit. In other words, you 'breakeven'.

The break-even-point is the level of sales at a given price where you make neither a profit nor a loss

If you sell more goods, you will make a profit. If you sell less goods, you will make a loss. Before you decide how many goods to produce it is always good to know the breakeven point at the current market price.

Calculation

The breakeven point is calculated as follows:

Step 1

Determine the variable costs per piece. The total variable costs for a specific period is divided by the amount of pieces sold in that period.

In the period from the 1st of January to the 31st of December, Mr. Garcia has variable costs of LU 550'000 (B) and sells 50'000 tiles (C). The variable costs per piece is:

$$\frac{B}{C} = \frac{550000}{50000} = LU11$$

Step 2

Determine that part of the selling price which can be used to cover the fixed costs. This is the difference between the selling price (D) and variable costs per piece (B/C).

The selling price per tile is LU 18. The variable costs per tile are LU 11. The difference between selling price and variable costs is:

$$D \left(\frac{B}{C}\right) - 18 \quad 11 - LU7$$

Step 3

Determine the number of pieces which have to be sold to reach the breakeven point. This is the total amount of fixed costs (A) divided through the part of the selling price which can be used to cover the fixed costs (D - (B/C)).

The total fixed costs In this period are LU 280'000. The part of the selling price which can be used to cover the fixed costs is LU 7. Thus the breakeven point is:

$$\frac{A}{D-\left(\frac{B}{C}\right)}=\frac{280000}{7}=40000\,Tiles$$

Capacity

It is important to know if it is possible to produce the amount of goods needed to reach the breakeven point. For this reason, the capacity utilization at breakeven point should be calculated. If the resulting utilization is about 90% or higher, then the capacity of the workshop is *not enough.* In such a case either the capacity would have to be increased - perhaps with additional equipment - or the breakeven point can be reduced by *lowering costs* or *increasing the selling price.* Keep in mind that all tiles produced have to be sold, and that the selling price cannot be higher than your customers are willing to pay. *Capacity utilization at the breakeven point is the relationship between the capacity used at breakeven point and total productive capacity of the business.*

The maximal capacity of Mr. Garcia's workshop is 60'000 tiles per year. At the break-even-point of 40'000 tiles per year, only (40'000 * 100/60'000) = **67%** of the maximal capacity is used.

Conclusion: The capacity of Mr. Garcia's workshop is high enough to be profitable.

Price

Sometimes it is important to know the lowest price at which a certain number of goods can be sold without making a loss. This is the break-even price. If you sell the goods at a higher price than the break-even price you will make a profit. If you sell them at a lower price, you will make a loss. Remember, the break-even price increases if the number of goods produced and sold decreases. To calculate the breakeven price divide the total costs (fixed + variable costs) by the number of goods sold. The result will be the breakeven price.

In Mr. Garcia's workshop, the total (fixed + variable) costs of the 50'000 tiles produced and sold per year are LU 830'000. Thus, every tile has to be sold at least for (830'000/50'000) = **LU 16.60** to cover total costs.

Conclusion: As long as costs and quantity are unchanged, every price above LU 16.60 will lead to a profit.

Extra Costs

Sometimes it is necessary to take extra costs into account, for example, the repayment of loans. In such a case, you would have to sell additional goods to make a profit. To calculate the breakeven point including loan repayment, calculate the fixed costs *plus* the repayment amount, then divide this amount by the part of the selling price, you can use to cover the fixed costs. The result of this calculation will be the number of goods you must produce and sell to reach break-even point including loan repayment.

Mr. Garcia would like to pay back his loan of LU 70'000 The part of the price, which can be used to cover the fixed costs still is LU 7 (see above). To calculate the new breakeven-point, the amount of loan repay (LU 70'000) has to be added to the fixed costs: (280'000 + 70'000)/7 = **50'000 tiles**

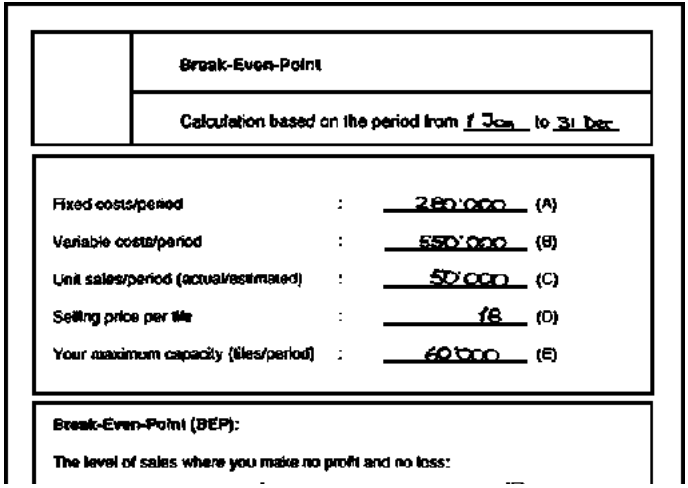
Conclusion: The new break-even-point is within the maximal capacity of the workshop.

Example Format

On the following page, you see an example how the calculation of break-even-point, capacity utilization, break-even-price and breakeven-point with loan repayment could look like. The figures needed for the calculations are taken from a profit and loss statement, the manufacturer's equipment specifications, or are estimated based on actual experiences.

Attention

Please make sure that all amounts used in calculations are from the same period (i.e., year, month, half-year). The calculations will not be accurate if the figures used are from different periods of time.



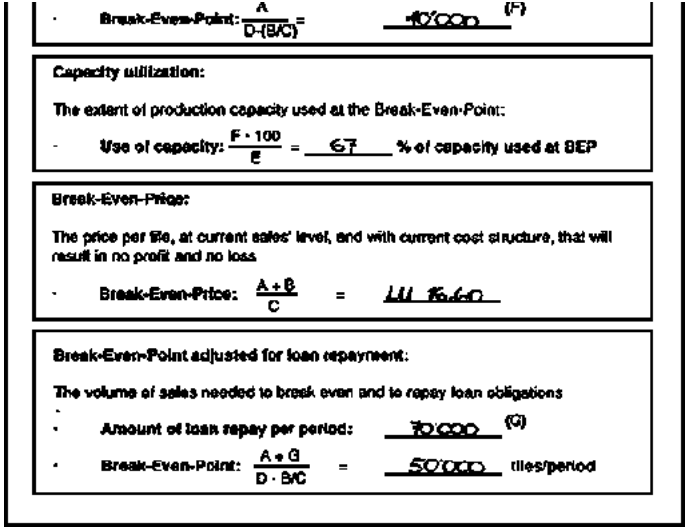
Break-Even-Point

Calculation based on the period from 1 Jan to 31 Dec

Fixed costs/period	:	280'000	(A)
Variable costs/period	:	550'000	(B)
Unit sales/period (actual/estimated)	:	50'000	(C)
Selling price per tile	:	18	(D)
Your maximum capacity (tiles/period)	:	60'000	(E)

Break-Even-Point (BEP):

The level of sales where you make no profit and no loss:



Example format to calculate the break-even-point

Exercise

Determine the figures for your own business and then calculate the breakeven point, the capacity utilization, the breakeven price and the breakeven point adjusted for loan repayment.

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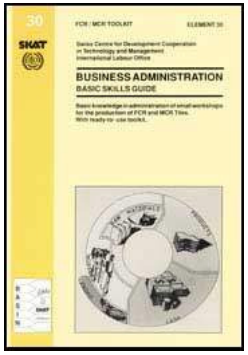

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Module 7: Marketing

Introduction

Goal

This module explains basically, what marketing is and gives some ideas how marketing can be done.

Purpose

The purpose of marketing is to find out who your customers are, what their needs are and how these needs can be fulfilled. Marketing is responsible for the design and distribution of products. Selling is necessary for a successful business and marketing is necessary to sell goods. Marketing is an essential part of running a business and should not be neglected.

The purpose of this module is to give you a little *basic knowledge* about marketing and show how this knowledge can be used to improve your business. The most important aspects of the product are described and the marketing tools "distribution", "promotion" and "selling" are presented.

For more detailed information please consult the "Marketing and Selling Guide".

The Product

Definition

Marketing is concerned with finding out what customers need. It is also responsible for the design of products. Tiles, for example, vary with regard to shape, size, colour, quality and price.

Features

You need to find out what your customers need, when they need it, and where they want it. There are many ways to find out what customers want. Below some possibilities are given how to do this:

- **Ask existing and potential customers what they need. When you visit a customer,**

listen to him and try to find out what he *really* needs. You may have to offer new products to meet the needs of your customers.

- **Analyse your sales: How many goods of each type were sold? Are there trends?**

- **Find out current trends in the market. Are there new products? What advantages and disadvantages do they have compared to your products?**

- **What are your competitors doing? Are they having more success? If so, what are the reasons for this?**

- **Analyse your own and your competitors' products. What are the strong points and what are the weak points of your products compared to those of your competitors? Could you improve your position? And if so, how?**

A few architects asked Mr. Garcia if he could offer green pantiles. Others would prefer to buy whole roofs instead of loose tiles. Mr. Garcia decides to produce a few green pantiles and try to sell them for a good price. Moreover, he will took for a carpenter. Together they could offer whole roofs.

Quality

Most customers do not like products with poor quality. They will hardly buy the same product again, even if the quality has improved. High quality is one of your best marketing tools. Therefore, only offer products with a high quality.

Test every product before selling it, to see whether it meets your high quality standard.

A roof is expensive and should be of good quality. If potential customers see roofs which are not constructed well or have broken tiles, they wilt not trust the quality of FCR/MCR tiles and prefer to use other roofing materials.

Price/Quantity

As you have seen in module 4 "Costing and Pricing" and in module 6 "Financial Analysis", price and quantiy are interdependent. If the demand for a certain product is high enough, it may be interesting to produce and sell more pieces at a lower price. However, the selling-price should always be higher than the production costs of that product.

Mr. Garcia finds out that with his production of 20'000 gray tiles per year, the costs per tile are LU 19 and the market price is LU 18. However, if he produces 50'000 gray tiles per year, the costs per tile will be LU 14. As long as he can sell all the gray tiles he produces, he should produce more tiles and sells them at a lower price.

Marketing Tools

Purpose

Even if your products meet customer needs, you cannot be sure that your customers will buy them. You have to inform potential customers about your products and their advantages. For this reason you have to think about distribution channels as well as promotion and selling.

Distribution

When starting your business, it may be quite difficult to inform people about your products and to sell enough goods to make a profit. It may be a good idea to sell to retailers who then sell at speciality shops (for example building materials shops). The price a retailer pays will be lower than the one a customer will pay. Your marketing costs, however, are lower and the greater turnover will help to cover fixed costs. In addition, because retailers normally pay cash on delivery, you will have less debtors.

Promotion

Even if you offer an attractive product at an attractive price, people will not buy your products if they do not know about them. For this reason, you should promote your products and other services. When planning a promotion campaign, the following points should be considered:

- **You need to have a clear idea who should know about your product. Who decides whether your tiles will be bought and used?**
- **Next, you should find a way to make people aware of your product. How can potential customers learn about the advantages of your products?**
- **You have to think about the message: what would you like to tell people?**

Mr. Garcia knows that architects normally decide what roofing material is used. Therefore, his promotion campaign will be designed to reach architects. Mr. Garcia consults the telephone book and finds the addresses of 34 architects in his town. He decides to write personal letters to each of them and enclose a folder about the advantages of FCR/MCR technology.

He also plans to visit each of them. Mr. Garcia knows from experience that many architects use FCR/MCR tiles for the roofs of expensive houses. Thus he presents the tiles as a "modern, attractive and high quality roofing material for people with high social ambitions".

A few more ideas for promotion campaigns are given below:

- **To make people aware of your products, you can demonstrate your products at fairs or at busy places where people can see them.**

Mr. Garcia installs a demonstration roof at a bus station in the centre of his city.

- **You might rent a display window to show your products.**
- **You can place advertisements in newspapers, on the radio and television.**
- **It is also a good idea to make special conditions for customers who are important people. If they have trust in your product, other people will follow.**

Selling

Even if potential customers know about your products, you still have to actively sell your products. Selling skills can be learned. You can learn more about selling in the special toolkit on marketing. In this module only a few essential points are mentioned:

Main Points

Normally, there will be other businesses selling the same products. You need to have good arguments and reasons why your products are better than those of your competitors. This means that you must know the strong points of your products. Unfortunately, most products also have weak points. It is important to know their disadvantages and to have good arguments to dispel your customers' doubts.

However, do not tell your customers things which are not true.

If a customer asks you if it is possible to walk on an FCR/MCR tile-covered roof, you must not say "yes", when you know that walking on the tiles will break them. You can, however, ask him how often and why he needs to walk on his roof and he may realise that it is not necessary to walk on the roof.

Impression

An important point is the impression a potential customer has of you and your workshop during negotiations. If he has a positive impression, it is more likely that he will decide to buy your tiles.

	CASH BOOK					
	YEAR _____	**SHEET NO. _____**				
DATE	ITEM	VOUCHER NO	CODE OF ACCOUNT	CASH IN	CASH OUT	BALANCE
	Starting cash					

	TOTAL					

CASH BUDGET:

FOR THE PERIOD _____ TO _____ 19 _____

	Time
	Cash

CASH AT START	
	Cash Sales
CASH IN	Other CASH IN
	TOTAL CASH IN
CASH AT START + CASH IN	
	Wages
	Raw Materials
	Overheads (water, energy, management)
	Maintenance
CASH OUT	Withdrawals
	Loan repayment
	Loan interest
	Investments
	Other CASH OUT
	TOTAL CASH OUT
CASH AT END **(START + CASH IN) - CASH OUT**	

	DEPRECIATION RECORD	
Item: _____		
Year of purchase:		_____
Price paid:		

Price paid:		_____
Estimated lifetime (in years):		_____
Depreciation per year	cost	_____
	estimated lifetime	_____

If the yearly inflation is higher than 30%, please enter above the figures for 'Price Paid' and 'Depreciation per year' in US$ and use the table below to calculate the yearly depreciation in your local currency.

Year	Exchange rate to US$	Depreciation amount in local currency	Commentary (maintenance, condition etc.)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

_____	_____	_____	_____
_____	_____	_____	_____

	Costs per Tile			
	Calculation based on figures for the period from _____ to _____ Estimated production: _____			
Variable costs per 1'000 tiles				
Material	**quantity**	**unit**	**price/unit**	**costs**
Cement	_____	_____	_____	_____
Sand	_____	_____	_____	_____
Fibre/Aggr.	_____	_____	_____	_____
Wire	_____	_____	_____	_____
			TOTAL	_____
Labour	**hours**	**costs/hour***		**costs**
unskilled	_____	_____		_____
skilled	_____	_____		_____
			TOTAL	
Total variable costs for 1000 tiles				_____
-->Total variable costs per tile				_____
Fixed costs				
	Water, energy			

	- Water, energy	_____
	- Transport	_____
	- Fixed salaries + social security expenses	_____
	- Depreciation	_____
	- Financial costs	_____
	- Maintenance	_____
	- Office	_____
	- Marketing	_____
	- Fees	_____
	- Other fixed costs	_____
	Total fixed costs	_____
	Estimated production	_____
	Fixed costs per tile (Total costs ÷ production)	_____
Costs per tile (fixed costs + variable costs)		_____

*** Including direct social security expenses**

	STOCK RECORD
Date:	

STOCK				
	amount in stock **(A)**	unit **(B)**	cost/unit **(C)**	value **(A-C)**
- cement				
- sand				
- fibre				
- colorants				
- wire				
- tiles				
-				
-				
Total value of stock				

DEPRECIATION SUMMARY				
				Date:
DESCRIPTION	DATE OF PURCHASE	LIFETIME (Years)	PRICE PAID	YEARLY DEPRECIATION

		TOTAL		

	Profit and Loss Statement **FOR THE PERIOD _____ TO _____**			
Sales (100)		_____	+	_____
Costs of Goods Sold				
Initial Value of Stock	+	_____		
Purchase of Raw Materials (200)	+	_____		
Goods available for Sales	=	_____		
Final Value of Stock	-	_____		
= Costs of Goods Sold			-	_____
Gross Profit			=	_____
Expenses				
Working Costs (300) (wages, salaries and social security expenses)	+	_____		
Production Inputs (400) (water, energy, consumables)	+	_____		
Overheads (500)	+	_____		

(transport, office, marketing, maintenance, taxes and fees, interest, others)				
Depreciation (600) (buildings and equipment)	+	_____		
= Total Expenses			-	_____
Net Profit			=	_____
Less withdrawals (700)			-	_____
Retained Profit			=	_____

Break-Even-Point
Calculation based on the period from _____ to _____

Fixed costs/period	:	_____ (A)
Variable costs/period	:	_____ (B)
Unit sales/period (actual/estimated)	:	_____ (C)
Selling price per tile	:	_____ (D)
Your maximum capacity (tiles/period)	:	_____ (E)

Break-Even-Point (BEP):

The level of sales where you make no profit and no loss:

- **Break-Even-Point:** $\frac{A}{D-(B/C)}$ = _____ (F)

Capacity utilization:

The extent of production capacity used at the Break-Even-Point:

- **Use of capacity:** $\frac{F \cdot 100}{E}$ = _____ **% of capacity used at BEP**

Break-Even-Price:

The price per tile, at current sales' level, and with current cost structure, that will result in no profit and no loss

- **Break-Even-Price:** $\frac{A+B}{C}$ = _____

Break-Even-Point adjusted for loan repayment:

The volume of sales needed to break even and to repay loan obligations

- **Amount of loan repay per period: _____ (G)**

- **Break-Even-Point:**

$$\frac{A+B}{D-BC} = \_\_\_\_\_ \text{ tiles/period}$$