

## 7 Product costing and pricing

This chapter describes the essential elements of costing procedures. Because of the importance of the competitive environment in both international trade fairs and global trading, crafts enterprises have to be certain that their costing and pricing are correct. In view of the complexity of the costing and pricing process, the reader is strongly advised to look for specific in-depth guidance from specialist sources.

*Note: Since this book is intended for use in many different countries, the term 'NU' has been used in this chapter to represent an imaginary 'national unit of currency'.*

Costing is the process of assembling all the financial ingredients that go into making a product. It is vital that all the costs involved in the manufacture of a product be accounted for. A price should never be set before the cost is calculated, or the product may be sold at a loss. This final sum is the base price of a product upon completion in the workshop. The final selling price is determined by the point at which the product is handed over to the customer. The cost of producing any item includes two basic components: direct production costs (materials, wastage and labour); and overheads (fixed and indirect overheads).

### Direct production costs

When fixing prices, it is important to include all the costs of the product manufacturing process.

**Raw material costs.** These should cover every item of material used in the manufacture of the product. It is important to calculate the exact amount of raw material used, because inaccurate assessments can mean the difference between profit and loss on a product.

**Wastage costs.** These cover any material discarded during the production process. Some timber may be diseased and unusable. Off-cut pieces of fabric may be too small to be used. These are known as 'scrap material'. They are a major challenge for manufacturers because they are expensive. In some cases, smaller products can be manufactured from waste, thus reducing the quantity being discarded. In certain cases scrap can be sold (e.g. waste paper). It may also be recycled (e.g. clay). It should not be forgotten that all waste material has a financial value which must be calculated as part of the raw material costs.

**Labour costs.** The time consumed in making any product is a cost in the form of production labour. Many small enterprises calculate labour cost on the basis of quantity of finished products per day. In certain instances this method of calculation produces inaccuracies, resulting in higher costs. It is advisable to calculate costs in terms of hours and minutes per operation. Each product can be calculated according to the exact number of labour operations required to obtain a finished item. Whether operations take days or merely seconds, all costs should be taken into account.

Let us take the example of the ABC Toy Company. Boxes 5, 6, 7 and 8 demonstrate the costing and pricing process for an individual product, e.g. a wooden toy. Box 5 shows a direct production cost calculation. The calculation for an hourly overhead rate is shown in Box 6. Box 7 shows how a finished product price is obtained, while Box 8 shows the calculation for the basic selling price in the workshop, which is the lowest price at which a product can be offered in the market-place.

**Box 5**

### Calculating the direct production costs (ABC Toy Company)

Take the **raw material costs** to make one wooden toy

Timber NU 3.75

Paint, varnish NU 0.75

**Total raw material costs NU 4.50**

Add (+) labour hours to make one wooden toy

Cutting timber 0.75

Assembly 1.2

Finishing 0.9

**Total labour time: 2.85 hours**

Multiply by (X) hourly labour rate (NU 4.00)

(ABC Company pays NU 4.00 per hour)

Equals (=)

**Total labour costs NU 11.40**

Equals (=)

Finished product price NU 15.90

This is the basic price of a product in the workshop. To this should be added the overhead allocation (Boxes 6 and 7), packaging costs (Box 8), and percentage profit markup (Box 8), to obtain the selling price (ex-works) (Box 8).

## Overhead costs

The direct production cost does not include the other costs that a craft enterprise has to pay in the course of daily operations. Some costs can be easily overlooked, whereas they should be part of those built into the product price. For example, the wages paid to a security guard who watches the company offices are also part of the costs of running the enterprise. These additional costs are known as overheads. There are two types of overheads: fixed and indirect.

## Fixed overheads

Fixed overheads are those costs which are incurred on a regular basis regardless of production output activity. If there is a workshop building, for example, then this building has to be paid for or rented, even when there is no production taking place. Full-time staff involved in production have to be paid even if there are no orders being completed. Fixed overheads include:

**Rent/mortgage.** As mentioned above, workshops have to be paid for, even when not in production. In many smaller companies, the workshop is in a family home. In this case only a portion of the total cost need be included as an overhead. With a separate building, however, the whole rental or mortgage cost is an overhead.

**Building construction.** When a building is specially constructed for production purposes, it is necessary to cover the cost by accounting this to the overhead costs of manufacture. In the end this cost will be a fractional charge on the cost price of each product.

**Machine/tool depreciation.** Machines and tools purchased for production purposes have to be replaced in due course. In order to be able to purchase replacement equipment, the cost of the machinery must be reclaimed by way of a percentage on the overhead account. All machinery and equipment depreciate throughout their working life.

It is possible to calculate the yearly rate of depreciation, or written-down value, for a machine by dividing the cost price of the machine by the estimated number of years life the machine may have then subtracting the resulting figure from the value each year. Thus a machine costing US\$100 with a life of four years will reduce by US\$25 every year. This yearly rate of depreciation can be allocated to overhead percentages by a markup on the product cost price.

**Taxes.** Certain taxes in most countries are paid only by the manufacturing industries. These include special business taxes and charges made by municipal offices, water supply, province or state levies on trucks transporting goods between cities. All such taxes should be included in overhead costs where they affect the product cost price.

**Wages (full-time staff).** In businesses employing full-time workers, wages have to be considered as a direct part of the product cost. Most employers include this in the product cost price.

**Loan repayments.** Loans and interest on loans, which are directly related to the manufacturing business, should also be considered as part of the overhead costs of production. Buildings, machines, vehicles and equipment are frequently purchased with loans.

**Insurance.** Craft enterprises sometimes take out insurance cover to protect their investment in a business against fire and theft. Others take out insurance to protect the

enterprise and employees against accident and sickness claims. These kinds of insurance are also part of the overhead costs of a business.

**Pension schemes.** In certain countries and companies, employers make contributions to social welfare schemes that provide pensions to permanent staff at the end of their working life. These are also part of overheads and should be reflected in the cost price.

## Indirect overheads

Other costs involving staff, equipment and activities are not a direct part of the production process. Such costs are indirect. Yet all or part of these should be included in the production cost.

**Wages (support staff).** Most companies have personnel who are not directly involved in production, for example, administrative and secretarial staff, drivers, mechanics and security guards. Their wages have to be considered as an overhead. In some cases, for example, a security guard may be watching over a workshop in a larger complex, yet only a portion of his wages would be charged to the workshop overheads.

**Equipment and vehicle operating costs.** All equipment needs maintenance, cleaning and general care. Small electrical power tools such as bench drills and paint-spray equipment need labour to clean them and mechanics to service them. Handlooms need parts replacement. Such costs have to be charged to the enterprise and repaid from the product price.

## Other operating costs

Several other costs come under production costs. Some of these may be totally related to the business, others only in part, but they should never be overlooked if profits and business growth are to be achieved without error.

**Electricity, gas, water utilities.** All power consumption related to office and production units should be allocated to overheads. If workplace and residential accommodation are combined, then a portion of the power bills has to be calculated and applied to costs.

**Postage.** Many artisan enterprises fail to account for postal charges incurred on business accounts. Sample parcels, bills, accounts, catalogues and price-lists involve high costs for postage, especially to foreign countries. Complete records should be kept to calculate overheads.

**Office stationery.** As enterprises become involved in international trade and expand, it is necessary to obtain high-quality business stationery. As business develops the quantity of official stationery increases.

**Sample-making costs.** Samples have to be made to send to customers. This takes time and considerable effort, costing more than production items. The samples must be

properly prepared, labelled, packaged and sent by surface or air mail. This is costly, all the more so since customers are not prepared to pay for them. The cost must therefore be borne by the artisan enterprise. As business develops, more and more samples have to be sent to an ever larger range of customers. Sample costs have to be planned and a budget prepared to meet these costs, which are also part of the overheads of a craft business.

**Telephone/fax/telex/telegram charges.** All businesses are now using more and more technology to communicate. Orders, specifications, confirmations, modifications and dispatch notes are being faxed daily round the world. E-mail is increasingly used to communicate with customers, and is cheaper than fax or telephone. But all such systems cost money and the charges have to be entered as overheads.

**Business-related travel.** Many crafts enterprises now send representatives abroad to their target market to meet customers, attend fairs and make study tours. This is an essential part of keeping in touch with trends in a market-place, and face-to-face contact with a customer is far preferable to telephone conversations between different time zones. But international travel is not cheap, and transport and hotel costs in developed countries are high. Manufacturers have to find ways to generate the funds for these journeys, and a planned budget figure can be costed into the overheads of a product.

**Inflation.** National inflation rates vary from country to country. These inflation costs hit manufacturers with increased costs for utilities, transport and services, wages and materials. The inclusion of national inflation percentages as a portion of overheads is very important.

**Contingency allowances.** No matter how well organized and managed a business may be, there will always be the unexpected event that calls for money to repair or reorganize in order to maintain the flow of business. Good business practice dictates that the overheads include a small percentage to provide for such incidents.

## Calculating the overheads

It is not enough to know the total value of an enterprise's overheads in order to include it in the product price. It is necessary to find a rate for the overhead that can be made part of the product pricing calculation. The simplest way is to calculate the overhead rate per hour, because the same labour time can be used to calculate the overhead cost per product. As nearly every product takes a different amount of time to make, then the overhead, too, will be different. Continuing with the example of the ABC Toy Company, Box 6 shows how to calculate the total overhead, and the overhead rate per hour.

## Calculating the overheads as part of the product price

In order to recover expenditure on overheads, the total overhead costs for any enterprise have to be allocated proportionally to the price of products. Overhead costs should be recorded carefully and adjusted regularly to ensure they are up to date. These annual costs can be divided by fifty-two to make a weekly figure, and then divided again by the number of production labour hours there are in one week. In the case of the ABC Toy Company, a production worker will work a forty-hour week.

The calculation shown in Box 6 gives a fair distribution of the overheads for a range of products which take different lengths of time to make. It is preferable to calculate the overhead rate per hour, because in most artisan enterprises production times for a product are usually counted in hours. Add together all the working hours spent by artisans in making all products in one week. Divide this total into the weekly overhead costs to arrive at the overhead rate per hour.

Multiplying the actual hours it takes to make a product by the overhead rate gives a proportional amount of overheads for that particular product. One product might take longer to make than another, and so has a higher allocation of overheads.

For example, if an ABC Toy Company product takes five hours to make, then the overhead cost allocated to it is NU 6.05 (5 hours  $\times$  1.21 overhead hourly rate). If the time taken in making another item is twelve hours, then the overhead cost in that case is NU 14.52 (12 hours  $\times$  1.21 overhead hourly rate). In each product the proportion of overhead cost is directly related to the number of hours spent making it.

Overhead calculations should be included in every product price if the overheads are to be recovered during a business year.

## Box 6

**Calculating the hourly overhead rate (ABC Toy Company)***Fixed overheads (per year)*

Workshop rent NU 5,000.00  
 Machine depreciation NU 550.00  
 Local taxes NU 650.00  
 Loan repayments NU 120.00  
 Insurance NU 95.00

*Indirect overheads (per year)*

Security staff wages NU 2,000.00  
 Supervisor wages NU 2,000.00  
 Driver wages NU 2,000.00  
 Vehicle operating costs NU 2,000.00  
 Utilities NU 1,550.00  
 Postage NU 540.00  
 Sample-making costs NU 2,540.00  
 Telephone/fax NU 990.00  
 Business travel NU 5,760.00  
**Total actual overheads per annum NU 25,795.00**

*Plus (+)*

National inflation (at 6.5 per cent per annum) NU 1,676.68  
**Sub-total overhead+inflation NU 27,471.68**

*Plus (+)*

Contingencies (at 10 per cent per annum) NU 2,747.17  
**Total estimated annual overheads NU 30,218.85**

**To calculate the weekly overhead rate**

*Divide by the number of working weeks per annum (= 52)*

Weekly overhead rate: NU 581.13

*To calculate the hourly overhead rate, divide by*

**Total production hours of all artisans = 480**  
 (ABC has twelve artisans each working forty hours a week)  
 Hourly overhead rate: NU 1.21

**Finished product price or manufacturing price**

Finished product price is the direct production cost plus a percentage of the overhead costs mentioned above. This gives the basic price of the product when it leaves the workplace. Box 7 demonstrates the calculation used to achieve the finished product price. This price is the lowest possible production cost. Two other items have to be added before the product reaches the selling price.

## Box 7

**Calculating the finished product price (ABC Toy Company)**

(From Box 5) total direct production cost (of wooden toy) NU 15.90

*Plus (+)*

(From Box 6) hourly overhead rate NU 1.21

*Multiplied by (x)*

(From Box 5) total labour time (to make wooden toy) 2.85 hours

*Equals (=)*

**Total overhead costs (for wooden toy) NU 3.45**

*Equals (=)*

Finished product price (for wooden toy) NU 19.35

This is the total construction cost of the product in the workshop.  
It is not the selling price (to calculate this, see Box 8)

**Packaging costs**

A product cannot be sold on a large scale without packaging. The cost of any individual display or protective packaging for the product has to be added to the price of the product, on a price per piece basis. Bulk transport packing for shipment has to be included, broken down into an item cost per piece. This is then added to the finished product price.

**Profit percentage margin**

Following the addition of the overhead percentage and packaging costs to the product, the profit percentage must be calculated and added to the costs. The calculation of profit margins is influenced by: manufacturing costs; overhead costs; competitors' prices; volume of goods produced; and perceived product value in the market.

The more products are manufactured and sold, the cheaper the selling price because of the narrower profit margin and larger orders. Certain key products – particularly in luxury items, for example, alpaca garments in the high fashion market – can charge prices far higher (premium prices) than the real value of the merchandise. Many companies work on the basis of the maximum profit margin that the market will be prepared to pay. The resulting price is the ex-works price.

**Selling price**

Following the addition of packaging costs and the profit margin, the product has a price at which it can be offered to the market. If the costing calculations have been carefully worked out, and the profit margin added with consideration of the prevailing competing prices in the target market, then the product has a chance of selling. As mentioned above, this is the workshop price. It is the lowest price at which the product should be sold.

For products sold locally, negotiations will take place with buyers to determine responsibility for transport costs.

In the export market, prices are often more open to negotiation. This reflects the demand for the product and the quantities to be ordered. Buyers from importing companies are highly competent in obtaining the best price for the product. Finalizing export prices requires detailed negotiation of export prices and contracts and is dealt with below.

**Box 8**

### Calculating the selling price (ex-works) (ABC Toy Company)

(From Box 7) take the finished product price (one wooden toy) NU 19.35

Add (+) packaging costs, say NU 3.50

Sub-total finished product price and packaging NU 22.85

Add (+) percentage profit margin, say 10%: NU 2.28

Equals (=) selling price in the production workshop NU 25.13

This selling price is also known as the ex-works price.

Additional information on export prices can be found in Chapter 11.

## Transport costs

If the product is being sold in the local market it will be necessary to calculate the itemized cost of transporting the product to the market-place. This is in addition to the ex-works price and covers the transport of the product from workplace to port or airport and to another country. It should be calculated on a per piece basis and added to the product price.

For the export market there are common international pricing methods which incorporate transport and other costs using standard terms and calculations. These are explained in Chapter 11.

## Other pricing considerations

Price is normally expressed as a total of percentage profit added to cost price. Costing is a mathematical calculation, whereas pricing is both mathematical and judgemental. The present Guide cannot recommend minimum levels of profit since margins are determined by factors such as interest on business loans. Profit is conditioned too by the state of the market. If competition is fierce, or trade is slack, the profit expectation will be lower. If the demand for a product is high or the goods have an excellent reputation for quality, reliability or design, the profit potential may be increased. These are all matters for decision by individual enterprises. It is wise to check what others are charging for equivalent items, and as many shops and catalogues should be researched as possible.

A complete set of price lists should be prepared before each trade fair: one for trade sales to retail and another for direct sales to consumers. Consumer prices will be higher than trade, but lower than full retail price in the shops (between 70 and 80 per cent of retail). Trade buyers will expect to see trade price lists, but will expect to negotiate for lower prices, particularly for larger quantities. It is essential to have two prices clearly in mind when negotiating – the best price and the lowest acceptable one. These provide a margin within which negotiations can safely be conducted. Finally, one should never sell at a loss.



## Checklist for costing and pricing

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### 1. Direct production costs

- Direct raw materials (basic raw material, including wastage; processing and finishing materials, fixings)
- Direct labour (wages paid to workers engaged in the processing of materials, finishing and assembly of the product – wages paid to inspectors, quality control of the product if specifically required for production)
- Direct expenses (all expenses incurred on a specific product, except direct labour and direct materials, such as hire of specialist tools)

### 2. Overheads

- Fixed overheads (rent, construction, depreciation, taxes, wages, loan repayments, insurance, pension schemes)
- Indirect overheads (wages for support staff, operating costs of equipment/vehicles, utility charges, postage, stationery, sample-making, telephone, fax and telex charges, business travel, inflation, contingencies)

### 3. Hourly overhead rate calculation

Total weekly overhead costs divided by total labour hours of production

### 4. Finished product price calculation

Direct production costs plus percentage overheads

### 5. Packaging costs

Material and labour costs of individual product packaging

### 6. Percentage profit margin calculation

### 7. Selling price (ex-works)

Finished product price plus packaging costs and profit margin

### 8. Selling price delivered to local customer

Ex-works price plus cost of transport to customer

The transportation costs to airport or harbour help to give the export price (FOB). For further details on export pricing, see Chapter 11.

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