

Before we explain how the K-Method is able to provide a good solution for the aforementioned “Major issues”, we would like to explain first what the K-Method is and how the K-Method works.

2.1 One Single Price

The easiest way to manage complexity when purchasing packaging materials is to agree to a single price (or flat price) for all the packaging materials of a purchasing category. This means the specifications and volumes of the individual packaging materials are ignored and a single price is agreed to with the supplier for all packaging materials.

Such a single price is possible from the supplier’s side only by using a mixed calculation. It is obvious that bigger packaging materials require more feedstock materials than smaller items. Hence, those bigger packaging materials will have a smaller margin for the supplier when applying a single price. It is also obvious that packaging materials produced in a high volume production run will have lower production cost than those produced in a low volume production run because the machine setup costs are spread over more packaging materials when the supplier produces in a high volume production run.

All these effects can be calculated and compensated through a mixed calculation which then leads to a single price for all packaging materials. The greatest problem with a single price is that it only works if call-off volumes and specifications remain unchanged during the contract period agreed to between the supplier and the buyer. Otherwise, the single price becomes a bet between the supplier and the buyer: if the average volume of a call-off is reduced, if the dimensions of packaging materials increase, if the number of printing colours increases, if the printing surface increases, the costs for the supplier will increase in comparison with his original calculation and he will lose some, if not all, of his profit margin. In such cases, the FMCG buyer would be the winner of the bet. On the other hand, when call-off

volumes increase or dimensions are reduced, the FMCG buyer will lose his bet and he will pay more than he should. When using single pricing, it is already enough if packaging materials of a certain specification are called-off in higher volumes, and other packaging materials in lower volumes, to trigger a mixed effect which will be unfavourable to one of the parties.

Bets tend to come with a “Betting Insurance” in the form of increased prices. This means, the supplier will provide for future unfavourable mixes by increasing the single price as not to suffer a loss when specification changes occur that will bring him below his margin. This means that the buyer will pay upfront for something he eventually might not make use of. Therefore, single pricing is to be rejected as a pricing method for packaging materials. Not only for this reason, is single pricing not commonly used in current business relations between FMCG buyers and suppliers.

2.2 Fair Price for Each Packaging Item

2.2.1 Consistent Prices for Individual Specification Attributes

From now on we assume that every packaging item carries a fair price to avoid the negative aspects of a mixed calculation. With “fair” we mean a consistent relationship between packaging items with different specifications. To phrase this is in a more general form: when a packaging item with a certain specification is extended by a feature “A” then its price will increase by X EUR/k pcs. A pricing system for a packaging category is considered to be “fair”, when every time a packaging item is extended by such an attribute “A”, the respective packaging item will increase its price by X EUR/k pcs—irrespective of which other features the packaging item has already specified. This means, feature “A” will have consistently added the same amount to the price of all packaging materials which carry feature “A”.

The point of view that a feature will always trigger the same increase in prices consequently leads to the scenario that every feature carries a single price. Hence, the total price of a packaging item is the sum of prices of all the features that form the specifications of a packaging item. The list of features, the individual prices for these features, and the calculation method to link the prices of individual features is called a price formula. The price formula agreed to between the supplier and the FMCG customer is an important part of the K-Method.

At this point we would like to emphasize that the price formula of the K-Method is fundamentally different from what is known as “Cost Engineering”. With Cost Engineering, the aim is to identify and quantify cost types and related costs of the supplier. Typically, these are depreciation, energy and labour costs. All these cost types are not features of a packaging material and they are not treated separately in a price formula. Even with feedstock materials, the only overlap between the K-Method and cost engineering, is that the K-Method pursues a different approach: While cost engineering tries to figure out what the real supplier purchasing costs for feedstock materials are, the K-Method requests a price from the supplier for

feedstock materials allowing him to include logistics cost and a margin. To put it in a nutshell: cost engineering tries to make the supplier's cost structure transparent to the buyer; the K-Method tries to produce consistent prices within a purchasing category.

2.2.2 Consistent Margin of the Supplier When Quoting Prices for Specification Features

In the chapter above we determined that a specification feature is always quoted with the same price for any packaging item. Now we wish to make sure that the supplier always calculates the same profit margin for any feature. This removes the incentive for the supplier to give preference to producing packaging materials which have high margin features while being reluctant to produce those with low margins.

This requires the supplier to be a good judge of market realities. Possibly, the supplier might have a competitive advantage when producing certain specific features. This may force his competitors to price this feature relatively high. In this case, the supplier will only pass on a small portion of his cost advantage as a price reduction to his FMCG customer while keeping most of the advantage as an extra margin for himself. On the other hand if he has a competitive disadvantage versus his competitors he may have to settle with a very low margin to be able to make offers at competitive prices for the same specification feature.

When applying the K-Method at any given point of time, the supplier will disclose neither his margin nor his costs. Therefore, the quotation of specification features at a constant supplier profit margin is rather a recommendation than a requirement.

It is very important is to apply a constant profit margin when calculating machine setup prices. Machine setups are not a specification feature of a packaging material but are an important part of the purchase order of the FMCG customer. A part of the price formula of the K-Method deals with the separate quotation of machine setups. We strongly advise that the supplier include the same profit margin (calculated on an hourly basis) when effecting machine setups as when producing regular packaging materials.

2.3 Method to Create a Price Formula

2.3.1 Selection of Specification Features

When creating a price formula, the first question is which specification features of the packaging material should be included in the price formula. Some features have no relevance when it comes to production costs, others have only slight relevance and others still are the main cost drivers of the packaging material.

In the end it is up to the supplier to decide which features are to be included in the price formula as he knows his own production process best. Feedstock materials play an important role for nearly all the packaging categories. Therefore, the feedstock material used needs to be specified as well as the amount contained in the packaging item. There is no standardised method to select the other features. However, at the end of the selection and quotation process, there should be a price formula which will always deliver to the supplier a constant margin based on turnover and time, irrespective of which specifications the customer chooses to order.

This constant margin should also be achieved when the customer decides to purchase only packaging materials with large dimensions. The same applies in a scenario in which the customer chooses to call off packaging materials with very small dimension and with very small production runs. Hence, it is still best to avoid mixed calculations between different dimensions, other features or production volumes. The supplier will always have a constant margin from the amount stemming from the price formula as a function of production time.

Of course, the price formula is a simplification versus the calculation programmes the supplier normally uses. An absolute margin consistency, therefore, cannot be achieved for the price formula. Hence, a certain margin volatility is acceptable. For the following example, we will apply a volatility of 3 % versus the absolute fair price which would be obtained from the calculation programme of the supplier.

2.3.2 Example

As an example, we would like to obtain a price formula for self-adhesive labels. We will go through the process step by step. In our example the FMCG buyer buys seven different labels from a supplier with the following annual quantities in 1000 pieces (k pcs) and prices (Table 2.1).

This is a rather simple example. In reality, a buyer may be responsible for a portfolio containing several hundred even several thousand different labels. But this small portfolio in our example serves our purpose.

Typically, prices per 1000 pieces (EUR/k pcs) have developed over time. The specifications of each label were defined at a different times and the price of that label was also agreed to with the supplier at different times. Once the price of a label has been agreed to for the first time, the prices of all the labels in a portfolio are adjusted during annual negotiations, normally by a percentage which is applied as a price change across the complete portfolio.

The supplier will typically use a sophisticated programme to calculate his prices when quoting for a label for the first time. This software determines the price taking into account, production costs, assumptions about the utilisation of assets, the market situation, customer strategy and possibly also synergy effects in the sourcing of feedstock materials and production of similar labels. The FMCG buyer has no access to this supplier calculation programme or to its algorithms, or to the

Table 2.1 Example labels—original prices

| | <i>Annual vol.</i> | <i>Price</i> | <i>Price</i> |
|---------|--------------------|---------------------|---------------|
| | <i>in k pcs</i> | <i>in EUR/k pcs</i> | <i>in EUR</i> |
| Label A | 4,000 | 14.82 | 59,274.10 |
| Label B | 50 | 31.30 | 1,564.80 |
| Label C | 2,500 | 18.31 | 45,775.78 |
| Label D | 1,750 | 6.55 | 11,462.53 |
| Label E | 850 | 79.04 | 67,187.42 |
| Label F | 150 | 46.93 | 7,040.08 |
| Label G | 200 | 32.45 | 6,490.50 |
| Sum | 9,500 | | 198,795.21 |

Total volume: 9,500 k pcs
Total price: 198,795.21 EUR
Average price: 20.93 EUR/k pcs

assumptions fed into it by the supplier. When applying the K-Method he does not need to. Currently, the buyer only receives the results of the supplier’s calculation programme which is the price for his materials (in our example labels) in accordance with the buyer’s specifications.

The big difference in prices between labels having different specifications is remarkable. Nevertheless, we would like to introduce the K-Method with the rather naive approach of a “single price”. This means, that we force the supplier, at least for the sake of the method, to calculate a single price for every label, irrespective of the label’s specifications. In our example the weighted average price is 20.93 EUR for 1000 labels.

This single price would be okay for both parties as long as volumes and specifications do not change, despite the massive mixed costing calculation. Unfortunately, this assumption is seldom correct. Volumes and specifications change on a regular basis, which normally triggers new negotiations between the supplier and the buyer.

It is one of the targets of the K-Method to find a price mechanism which avoids the necessity of having price negotiations when volumes or specifications change. Single pricing is obviously not the winning approach as it implies mixed costing and therefore is not sustainable. The target must be to modify the single price based on its cost drivers in such a way that the cost drivers themselves receive individual prices. This will lead to a price structure which no longer has mixed costing and is, therefore, robust against future volume and specification changes.

(i) Size

The size of a label plays an important role. Big labels are normally more expensive than small labels due to the quantity of material (substrate) used in the production process. So in a first step we isolate the size effect by converting the single price to a surface price.

Table 2.2 Example labels—surface price

| | <i>Annual volume</i> <i>in k pcs</i> | <i>Typ</i> | <i>Height</i> <i>in mm</i> | <i>Width</i> <i>in mm</i> | <i>Surface</i> <i>in m²/k pcs</i> | <i>Price</i> <i>in EUR/m²</i> | <i>Price</i> <i>in EUR/k pcs</i> | <i>Price</i> <i>in EUR</i> |
|---------|---|-------------|-------------------------------|------------------------------|---|---|-------------------------------------|-------------------------------|
| Label A | 4,000 | white | 111 | 73 | 8.103 | 2.75 | 22.28 | 89,133.00 |
| Label B | 50 | white | 84 | 60 | 5.040 | 2.75 | 13.86 | 693.00 |
| Label C | 2,500 | transparent | 98 | 66 | 6.468 | 2.84 | 18.37 | 45,922.80 |
| Label D | 1,750 | transparent | 45 | 45 | 2.025 | 2.84 | 5.75 | 10,064.25 |
| Label E | 850 | white | 112 | 180 | 20.160 | 2.75 | 55.44 | 47,124.00 |
| Label F | 150 | white | 100 | 80 | 8.000 | 2.75 | 22.00 | 3,300.00 |
| Label G | 200 | white | 85 | 55 | 4.675 | 2.75 | 12.86 | 2,571.25 |
| Sum | 9,500 | | | | | | | 198,808.30 |

Total volume: 9,500 k pcs
Total price: 198,808.30 EUR
Average price: 20.93 EUR/k pcs

The FMCG customer uses in his specifications two different substrates: “white” and “transparent”. The supplier makes an offer for labels according to the selection of substrate:

Transparent: Thickness 60 my 2.84 EUR/m²
White: Thickness 85 my 2.75 EUR/m²
(1 my = 1/1000 mm)

Now we expand the price table for the labels by the dimensions of each label in order to calculate the surface of each label. The surface of each label is multiplied by the surface price of the substrate to obtain the price of each label (Table 2.2).

In this way we obtain the same grand total and the same average price of 20.93 EUR/k pcs. We have now also found a formula to reflect future volumes and specification changes without the necessity of carrying out additional price negotiations.

When we now compare the surface prices (third column), which takes into account the different substrates and label sizes with the original prices (first column) we see big differences (last column). This suggests that from a supplier’s point of view, mixed costing is still being used, almost in the same way as when applying a single price. Especially when looking at Label A (original price: 14.82 EUR/k pcs, new price: 22.28 EUR/k pcs) the buyer will feel invited to purchase this label from another supplier. Just by going to another supplier for this label, the buyer could generate savings for himself. On the other hand prices for Label G (original price: 32.45 EUR/k pcs, new: 12.86 EUR/k pcs) is very favourable. The supplier may be selling this label at a loss, so he will not be interested in selling any more labels with similar specifications.

Summary: Defining the price of a label using its surface dimensions is a better method than using single pricing. However, it is still not robust enough to be used as the

Table 2.3 Example labels—price comparison between the original price and surface prices

| | <i>Original price in EUR/k pcs</i> | <i>Single price in EUR/k pcs</i> | <i>Surface price in EUR/k pcs</i> | <i>Price difference in %</i> |
|---------|--|--|---|--------------------------------------|
| Label A | 14.82 | 20.93 | 22.28 | 50.4% |
| Label B | 31.30 | 20.93 | 13.86 | -55.7% |
| Label C | 18.31 | 20.93 | 18.37 | 0.3% |
| Label D | 6.55 | 20.93 | 5.75 | -12.2% |
| Label E | 79.04 | 20.93 | 55.44 | -29.9% |
| Label F | 46.93 | 20.93 | 22.00 | -53.1% |
| Label G | 32.45 | 20.93 | 12.86 | -60.4% |

only price mechanism because the supplier will still be forced to use mixed costing. In the future, when volumes and specifications are changed, this will lead to new price negotiations. Thus, additional specification features need to be part of the price formula.

(ii) Machine Setup (“Setup”)

Apart from the surface and due to the quantity of required feedstock materials (substrate), the machine setup and its cost play a significant role when producing labels. Typically, a price per label is agreed to between the buyer and the supplier. When the supplier sets up the printing machine, there is no revenue to balance the involved cost because during machine setup only waste instead of labels is produced. The supplier will distribute the cost of machine setup over the labels of the following production run, treating this as a kind of amortization.

As a consequence of amortizing machine setup costs, labels produced in a long print runs will be cheaper than the same labels printed in a short run. The supplier normally passes on these savings to the buyer. E.g. he offers scaled prices where he defines quantity thresholds with respectively lower prices. The more labels the buyer orders, the lower the price of each individual label will be.

Predefined thresholds are the biggest weakness of scaled pricing. A customer’s modern production planning will use MRP runs to determine material requirements. Those quantities, calculated for each production run, are rarely the ones agreed to as thresholds in scaled pricing. This may lead to the obviously unfavourable, but economically optimal situation, that it is better to order a higher than needed quantity, which may not be used and will have to be disposed of, to reach the next price threshold, to minimize the total cost of the call-off. Otherwise, ordering slightly fewer quantities than required for the next threshold may increase the total purchasing costs by as much as 10 %.

In respect of machine setups, the K-Method has a different approach. Here, the focus is not on the supplier’s costs which must somehow be covered, but on a single price. The fundamental idea behind the K-Method is that every machine/hour needs to generate a margin for the supplier to cover overheads and profit. It is not relevant for the K-Method if the machine is running during the time needed to produce a label

(“Run”) or if the machine is just in the process of preparation of production (“Setup”). In both cases the machine needs to generate a margin per hour. Again, the supplier is asked to keep his calculation clean and not to allow any form of mixed costing. This leads to the obscure observation that the supplier’s margin is the same whether he is printing labels for 100 h or he is permanently setting up his printing machine during those 100 h. This could mean that the supplier was setting up his machine 50 times for 50 different label formats without printing a single label.

This requirement of having equal margins for setups as for actual print runs on an hourly basis may seem reasonable for outsiders but for suppliers this is rather weird. In any case, this requirement is a core element of the K-Method. This right of compensation for machine setups gives the customer total flexibility with respect to call-off volumes. He may use this flexibility to his own advantage rather than to the advantage of the supplier. Further on this in later chapters.

After assuming that the supplier will have a fixed margin per machine hour, the supplier will now be interested in selling as many machine hours as possible. When looking at a portfolio with a certain annual volume, he will be interested in small production runs. In such a case more machine setups are required and therefore the number of machine hours is maximized. The buyer needs to discourage the supplier from carrying out large production runs and saving machine setups while continuing to invoice machine setups which were never actually needed. This supplier’s dilemma will also be discussed more thoroughly in a later chapter.

To continue with our example: the supplier will now also explicitly charge for every machine setup. For our example, we have chosen specifications requiring a wide range of printing technologies and we also selected a supplier who is able to serve these printing requirements: offset printing, flexo printing, and silkscreen printing.

At this point we need not elaborate on the different printing technologies. As an experienced buyer we accept them as part of the specifications which are provided by the Packaging Development Department. However, it is important to note that the K-Method can calculate the label cost for all kinds of printing technologies using the same print impression. In this way, Marketing can decide if the higher print quality achieved by a more expensive print technology is worth its cost on a specific packaging item. Thus, the K-Method also facilitates the Value Analysis of a packaging item. This aspect of the K-Method will be discussed in greater depth in a later chapter.

The supplier makes the following price offer for machine setups:

| | |
|------------|--------------------------|
| Offset | 500 EUR + 150 m material |
| Flexo | 300 EUR + 300 m material |
| Silkscreen | 300 EUR + 150 m material |

This means that a machine setup has a time/cost component and a material component. When setting up a machine, material is used to fine-tune the printing image. This material is wasted and must be disposed of. Typically, the waste material is expressed in metres and not square metres as it is a function of the speed of the printing machine and the time required to achieve a satisfactory printing image. The effective surface is finally calculated by multiplying the metres

with the effective printing width of the printing machine which is a function of the height of the label and the number of labels printed at the same time.

Since the substrate costs are volatile and differ according to the specifications of the substrate the supplier offers the substrate separately:

| | | |
|--------------|-------|-------------------------|
| Transparent: | 60 my | 0.73 EUR/m ² |
| White: | 85 my | 0.71 EUR/m ² |

For the purpose of this example, the waste generated during the machine setup will be charged at this price.

At this point we would like to discuss the possibility of producing several labels at the same time (“Repeat factor”). Every time a production machine allows the production of several packaging items at the same time, this question arises. Often moulds determine the number of packaging items produced simultaneously, e.g., when using injection moulding, the number of cavities of the mould determines the output during each production cycle. When printing labels the height of a label determines the maximum number of labels produced at a time. We will assume a maximum printing width of 350 mm which will lead to the following repeat factor (Table 2.4).

This means several labels can be produced at the same time. They are placed parallel to each other. At the end of the production run, the print coil is cut into several coils in such a way that only one label placed vertically is left on each coil. Only coils with that format can be used with labelling machines in the production hall of the FMCG customer.

The coils used for printing are assembled from much bigger coils. A coil with the effective printing width can thus be used and the waste during machine setup only needs to be calculated on the basis of the effective printing width (Table 2.5).

The price of the machine setup in our example is only 9 % of the total label price. As experience has shown, this can be much higher depending on the production run and the purchasing category.

To simplify the price formula for machine setups, a certain number of printing colours can be included in the price from the start. In our example the supplier and

Table 2.4 Example labels—calculation of number of copies printed at a time

| | <i>Printing width</i> <i>max in mm</i> | <i>Label height</i> <i>in mm</i> | <i>Repeat Factor</i> <i>in pcs</i> | <i>Effective Printing width</i> <i>in mm</i> |
|---------|---|---|---|---|
| Label A | 350 | 111 | 3 | 333 |
| Label B | 350 | 84 | 4 | 336 |
| Label C | 350 | 98 | 3 | 294 |
| Label D | 350 | 45 | 7 | 315 |
| Label E | 350 | 112 | 3 | 336 |
| Label F | 350 | 100 | 3 | 300 |
| Label G | 350 | 85 | 4 | 340 |

Table 2.5 Example labels—machine setup

| | Print runs/ | | Effective | | | Machine | | | | | |
|---------|---------------|----------|--------------|-------------|-------------|-----------|-------|--------------|--------------|--------------|------------|
| | Print | Call-off | Setup | Print width | Type | Substrate | Waste | Setup | | | Total year |
| | | per year | in EUR/Setup | in mm | | in EUR/m2 | in m | in EUR/Setup | in EUR/Setup | in EUR/k pcs | in EUR |
| Label A | Offset | 12 | 500.00 | 333 | white | 0.71 | 150 | 35.46 | 535.46 | 1.61 | 6,425.57 |
| Label B | Offset | 1 | 500.00 | 336 | white | 0.71 | 150 | 35.78 | 535.78 | 10.72 | 535.78 |
| Label C | Flexo | 12 | 300.00 | 294 | transparent | 0.73 | 300 | 64.39 | 364.39 | 1.75 | 4,372.63 |
| Label D | Flexo | 6 | 300.00 | 315 | transparent | 0.73 | 300 | 68.99 | 368.99 | 1.27 | 2,213.91 |
| Label E | Silkscreen | 4 | 300.00 | 336 | white | 0.71 | 150 | 35.78 | 335.78 | 1.58 | 1,343.14 |
| Label F | Silkscreen | 4 | 300.00 | 300 | white | 0.71 | 150 | 31.95 | 331.95 | 8.85 | 1,327.80 |
| Label G | Offset/Silks. | 2 | 800.00 | 340 | white | 0.71 | 300 | 72.42 | 872.42 | 8.72 | 1,744.84 |
| Sum | | 41 | | | | | | | | | 17,963.68 |

Total number of setups per year41Total price of machine setups17,963.68 EUR

the buyer have agreed on three colours. For any further colour, the buyer will have to pay a supplement:

| | |
|------------|--|
| Offset | 60 Euro + 70 m for each additional colour |
| Flexo | 45 Euro + 120 m for each additional colour |
| Silkscreen | 125 Euro + 50 m for each additional colour |

This means that the number of colours determines the price of the label since additional machine setups may be required. There is a maximum number of colours which a printing machine can apply at a time. If the customer specifies more colours than this maximum, the labels need to be printed twice. This adds significant complexity for the machine setup as well as for the production process of the label. Since such specifications do not deliver additional insights into the K-Method, we have not included such an example (Table 2.6).

Table 2.6 Example labels—setup for additional colours

| | Print | Colours | Setup | | | | | | | | | | Total year |
|---------|---------------|---------|---------------|---------------|--------|--------|-------------|-----------|-------|------------------------|-----------|--------------------|------------|
| | | | Setup | | Extra | Width | | Substrate | Waste | for additional colours | | | |
| | | | (3 col. free) | in EUR/colour | | in EUR | in m/colour | | | in mm | in EUR/m2 | in m2 in EUR/Setup | |
| Label A | Offset | 6 | 60.00 | 0.00 | 180.00 | 70.00 | 333 | 0.71 | 69.93 | 49.65 | 229.65 | 0.69 | 2,755.80 |
| Label B | Offset | 5 | 60.00 | 120.00 | 240.00 | 70.00 | 336 | 0.71 | 47.04 | 33.40 | 273.40 | 5.47 | 273.40 |
| Label C | Flexo | 4 | 45.00 | 0.00 | 45.00 | 120.00 | 294 | 0.73 | 35.28 | 25.75 | 70.75 | 0.34 | 849.05 |
| Label D | Flexo | 4 | 45.00 | 0.00 | 45.00 | 120.00 | 315 | 0.73 | 37.8 | 27.59 | 72.59 | 0.25 | 435.56 |
| Label E | Silkscreen | 4 | 125.00 | 0.00 | 125.00 | 50.00 | 336 | 0.71 | 16.8 | 11.93 | 136.93 | 0.64 | 547.71 |
| Label F | Silkscreen | 4 | 125.00 | 0.00 | 125.00 | 50.00 | 300 | 0.71 | 15 | 10.65 | 135.65 | 3.62 | 542.60 |
| Label G | Offset/Silks. | 6/3 | 60.00 | 0.00 | 180.00 | 70.00 | 340 | 0.71 | 71.4 | 50.69 | 230.69 | 2.31 | 461.39 |
| Sum | | | | | | | | | | | | | 5,865.52 |

Total number of setups per year41 (see table 2.5.)Total price Setup (setup + material)17,963.68 EUR (see table 2.5.)Total price Setup (additional colours)5,865.52 EUR

In our example the three additional colours for Label G need to be paid extra. The three colours used for silk screen printing are already included in the machine setup price.

Please note that there is a special, additional setup charge for Label B which is listed with 120 EUR in the column “Extra”. The reason for this additional setup

charge will be explained at a later stage of this example. For the time being just remember that for Label B there are additional costs for the machine setup which are charged above and beyond the five colours for the offset printing.

After having determined the setup charges, we would like to discuss the almost philosophical but definitely technical question of whether all the activities of a machine setup need to be carried out every time a different label is printed. The experienced label buyer will know that there may be several variants of each label. When switching production from one variant to another, fewer setup activities are required at the printing machine; for example, when a label has several different language variants and the label has been designed so cleverly that when changing the language only one colour is affected. In this case, only one printing plate needs to be changed and all the other colours and printing plates can stay as they are. Such a plate change, known as “changeover”, will require a separate price. It will save the buyer money if he orders labels in such a way that many setups can be converted to changeovers, as changeovers are cheaper than full setups.

In our example, all the labels are printed in several different variants. To simplify the example, all the variants are printed at each production run. Thus if a label has four variants, one setup must be paid for and there are three changeovers (Table 2.7).

Table 2.7 Example labels—setup and changeover

| | Changeover for additional variants | | | | | Total year in EUR |
|---------|--|----------|---------------|--------------|--------------|----------------------|
| | Print | Variants | Changeover | | | |
| | | | in EUR/colour | in EUR/Setup | in EUR/k pcs | |
| Label A | Offset | 4 | 60.00 | 180.00 | 0.54 | 2,160.00 |
| Label B | Offset | 4 | 60.00 | 180.00 | 3.60 | 180.00 |
| Label C | Flexo | 4 | 50.00 | 150.00 | 0.72 | 1,800.00 |
| Label D | Flexo | 4 | 50.00 | 150.00 | 0.51 | 900.00 |
| Label E | Silkscreen | 10 | 150.00 | 1,350.00 | 6.35 | 5,400.00 |
| Label F | Silkscreen | 2 | 150.00 | 150.00 | 4.00 | 600.00 |
| Label G | Offset/Silks. | 1 | 210.00 | 0.00 | 0.00 | 0.00 |
| Sum | | | | | | 11,040.00 |

| | | |
|---|----------------------|-----------------|
| Total number of setups per year | 41 | (see table 2.5) |
| Total price Setup (setup + material) | 17,963.68 EUR | (see table 2.5) |
| Total price Setup (additional colours) | 5,865.52 EUR | (see table 2.6) |
| Total price Changeover | 11,040.00 EUR | |
| Total price Setup & Changeover | 34,869.19 EUR | |

This means that a high number of label variants can cause the buyer high costs for changeovers. But they are still lower than if a full machine setup is charged. To avoid these high changeover costs, many FMCG companies try to place as many languages as possible on a single label (“language clusters”). Such language clusters not only avoid changeover charges but also increase the flexibility in logistic terms by increasing the flexibility in stock management. If, on short notice, the volume for one country is increased while the volume of another country is decreased, this will not affect the requirement for labels as such multi-language

Table 2.8 Example labels—setup and surface price for printing

| | Volume | Call-offs | Setup & Changeover | | Print surface price | Surface | Price | |
|---------|-----------------|------------------|-------------------------------|------------------------|-----------------------------|------------------------------|------------------------|---------------------|
| | <i>in k pcs</i> | <i>per year</i> | <i>in k pcs/call-off</i> | <i>in EUR/call-off</i> | <i>in EUR/m²</i> | <i>inm²/k pcs</i> | <i>in EUR/call-off</i> | <i>in EUR/k pcs</i> |
| Label A | 4,000 | 12 | 333.3 | 945.11 | 2.27 | 8.10 | 7,070.10 | 21.21 |
| Label B | 50 | 1 | 50.0 | 989.18 | 2.27 | 5.04 | 1,560.64 | 31.21 |
| Label C | 2,500 | 12 | 208.3 | 585.14 | 2.34 | 6.47 | 3,740.84 | 17.96 |
| Label D | 1,750 | 6 | 291.7 | 591.58 | 2.34 | 2.03 | 1,974.76 | 6.77 |
| Label E | 850 | 4 | 212.5 | 1,822.71 | 2.27 | 20.16 | 11,537.43 | 54.29 |
| Label F | 150 | 4 | 37.5 | 617.60 | 2.27 | 8.00 | 1,297.90 | 34.61 |
| Label G | 200 | 2 | 100.0 | 1,103.11 | 2.27 | 4.68 | 2,163.25 | 21.63 |

labels can be used for both countries. In a later chapter we will discuss the matter of whether multi-language labels are really such a good idea.

After putting a price tag to machine setups and changeovers, we need a new price for the actual printing of the surface which now excludes machine setups and changeovers. Our sample supplier quotes the following prices:

| | | |
|--------------|-------|-------------------------|
| Transparent: | 60 my | 2.34 EUR/m ² |
| White: | 85 my | 2.27 EUR/m ² |

The new version of the price formula is the following (Table 2.8).

Table 2.9 Example labels—price comparison: original price, surface price, setup and surface price for printing

| | Original price | Surface price | Setup + surface price | Price difference | Volume | |
|---------|-----------------------|----------------------|------------------------------|-------------------------|-----------------|---------------|
| | <i>in EUR/k pcs</i> | <i>in EUR/k pcs</i> | <i>in EUR/k pcs</i> | <i>in %</i> | <i>in k pcs</i> | <i>in EUR</i> |
| Label A | 14.82 | 22.28 | 21.21 | 43.1% | 4,000 | 84,841.25 |
| Label B | 31.30 | 13.86 | 31.21 | -0.3% | 50 | 1,560.64 |
| Label C | 18.31 | 18.37 | 17.96 | -1.9% | 2,500 | 44,890.04 |
| Label D | 6.55 | 5.75 | 6.77 | 3.4% | 1,750 | 11,848.54 |
| Label E | 79.04 | 55.44 | 54.29 | -31.3% | 850 | 46,149.72 |
| Label F | 46.93 | 22.00 | 34.61 | -26.3% | 150 | 5,191.61 |
| Label G | 32.45 | 12.86 | 21.63 | -33.3% | 200 | 4,326.50 |
| Sum | | | | | | 198,808.30 |

Total

198,808.30 EUR

Average

20.93 EUR/k pcs

The price development, after another step of the K-Method has been added, can be seen in Table 2.9.

By introducing Setup prices, the total price for the annual label volume has not changed. The average price across all labels remains at 20.93 EUR/k pcs. However,

this price now follows a certain pricing strategy and should be differentiated. Unfortunately, single prices for labels are still quite far away from the original prices. This is probably because we have not achieved the original target of providing a pricing system without mixed costing. To reach our target we have to differentiate the actual printing of the labels better than we have done up to now by using just the surface.

(iii) Printing (“Run”)

We already isolated the price for the substrate when we calculated the waste during machine setup. For the actual printing we should apply the same price for the substrate and ask for a separate quotation for the actual print run:

| | |
|-------------------|------------|
| Offset | 0.25 EUR/m |
| Flexo | 0.49 EUR/m |
| Silkscreen | 0.90 EUR/m |
| Offset/Silkscreen | 1.25 EUR/m |

Most printing machines run at a constant speed. Time—since we want to generate a constant profit margin per machine hour—can, therefore, be a function of metres produced by the machine. The supplier thus quotes the print run with 1 m as the base measurement unit.

He will also charge for an extra service called hot foil stamping. This hot foil stamping delivers shiny silver or gold effects on the labels.

Hot foil stamping 0.30 EUR m

As you might remember, Label B was charged with an extra 120 EUR for its machine setup. This charge was for hot foil stamping (Table 2.10).

Table 2.10 Example labels—calculation of run prices for printing

| | <i>Annual volume in k pcs</i> | <i>No of call-offs</i> | <i>Call-off volume in k pcs</i> | <i>No of labels in pcs</i> | <i>Label width in mm</i> | <i>Production length in m</i> | <i>Price printing in EUR/m</i> | <i>Special in EUR/m</i> | <i>Price special in EUR/m</i> | <i>Total printing in EUR/k pcs</i> |
|---------|---------------------------------------|----------------------------|---|------------------------------------|----------------------------------|---------------------------------------|--|-----------------------------|---------------------------------------|--|
| Label A | 4,000 | 12 | 333 | 3 | 73 | 8,111.1 | 0.25 | - | - | 6.08 |
| Label B | 50 | 1 | 50 | 4 | 60 | 750.0 | 0.25 | Hot foil stamping | 0.30 | 8.25 |
| Label C | 2,500 | 12 | 208 | 3 | 66 | 4,583.3 | 0.49 | - | - | 10.78 |
| Label D | 1,750 | 6 | 292 | 7 | 45 | 1,875.0 | 0.49 | - | - | 3.15 |
| Label E | 850 | 4 | 213 | 3 | 180 | 12,750.0 | 0.90 | - | - | 54.00 |
| Label F | 150 | 4 | 38 | 3 | 80 | 1,000.0 | 0.90 | - | - | 24.00 |
| Label G | 200 | 2 | 100 | 4 | 55 | 1,375.0 | 1.25 | - | - | 17.19 |

Now we have reflected the printing costs in an adequate price which was mainly determined by the number of labels printed at the same time, in parallel, and the printing technology used.

The only part which is missing is the substrate on which the labels are printed. We already mentioned the supplier’s quotation for this feedstock material (Table 2.11).

The printing price and feedstock materials are now included. Both are dependent on the call-off volume also known as the Run price.

Table 2.11 Example labels—calculation of the run price including printing and feedstock materials

| | Label height | Label width | Call-off volume | | Typ | Substrate | Substrate | Printing | "Run" | Total year |
|---------|-------------------------|------------------------|----------------------------|--------------|-------------|------------------|---------------------|---------------------|---------------------|-------------------|
| | <i>in mm</i> | <i>in mm</i> | <i>in k pcs</i> | <i>in m2</i> | | <i>in EUR/m2</i> | <i>in EUR/k pcs</i> | <i>in EUR/k pcs</i> | <i>in EUR/k pcs</i> | <i>in EUR</i> |
| Label A | 111 | 73 | 333 | 8.10 | white | 0.71 | 5.75 | 6.08 | 11.84 | 47,345.85 |
| Label B | 84 | 60 | 50 | 5.04 | white | 0.71 | 3.58 | 8.25 | 11.83 | 591.42 |
| Label C | 98 | 66 | 208 | 6.47 | transparent | 0.73 | 4.72 | 10.78 | 15.50 | 38,754.10 |
| Label D | 45 | 45 | 292 | 2.03 | transparent | 0.73 | 1.48 | 3.15 | 4.63 | 8,099.44 |
| Label E | 112 | 180 | 213 | 20.16 | white | 0.71 | 14.31 | 54.00 | 68.31 | 58,066.56 |
| Label F | 100 | 80 | 38 | 8.00 | white | 0.71 | 5.68 | 24.00 | 29.68 | 4,452.00 |
| Label G | 85 | 55 | 100 | 4.68 | white | 0.71 | 3.32 | 17.19 | 20.51 | 4,101.35 |

Table 2.12 Example labels—setup, changeover and run

| | Setup | Change- over | Run | Setup, CO, & Run | Original price | Surface price | Setup + surface price | Setup, CO & Run | price difference |
|---------|---------------------|-------------------------|---------------------|---------------------------------|---------------------------|--------------------------|--------------------------------------|--------------------------------|-----------------------------|
| | <i>in EUR/k pcs</i> | <i>in EUR/k pcs</i> | <i>in EUR/k pcs</i> | <i>in EUR/k pcs</i> | <i>in EUR/k pcs</i> | <i>in EUR/k pcs</i> | <i>in EUR/k pcs</i> | <i>in EUR/k pcs</i> | <i>in %</i> |
| Label A | 2.30 | 0.54 | 11.84 | 14.67 | 14.82 | 22.28 | 21.21 | 14.67 | -1.0% |
| Label B | 16.18 | 3.60 | 11.83 | 31.61 | 31.30 | 13.86 | 31.21 | 31.61 | 1.0% |
| Label C | 2.09 | 0.72 | 15.50 | 18.31 | 18.31 | 18.37 | 17.96 | 18.31 | 0.0% |
| Label D | 1.51 | 0.51 | 4.63 | 6.66 | 6.55 | 5.75 | 6.77 | 6.66 | 1.6% |
| Label E | 2.22 | 6.35 | 68.31 | 76.89 | 79.04 | 55.44 | 54.29 | 76.89 | -2.7% |
| Label F | 12.47 | 4.00 | 29.68 | 46.15 | 46.93 | 22.00 | 34.61 | 46.15 | -1.7% |
| Label G | 11.03 | 0.00 | 20.51 | 31.54 | 32.45 | 12.86 | 21.63 | 31.54 | -2.8% |

In the context of the volume scenario of our example, when we merge Setup prices, Changeover prices, Run prices we obtain the following prices for each label (Table 2.12).

When we compare these new prices with the original prices, we see that the new prices have a maximum deviation of 2.8 %. Thus, they are all within the 3 % tolerance we were aiming at to avoid mixed costing at the supplier's end. However, in this example and generally speaking, we do not know the supplier's margins. We have assumed that the supplier originally applied the same profit margin (in %) for each label when he originally quoted prices for the labels. Consequently, it cannot be assumed that the new prices which vary a maximum of 3 % from the old quotations guarantee a maximum deviation of 3 % of the margin, but the real deviation of the profit margin will be close to these 3 %.

2.3.3 Summary

From experience we know that the change from conventional individual pricing to a price formula will not yield such a harmonic picture as shown in our example. There will be spikes which enrich negotiations between supplier and buyer. Spikes towards higher original prices are probably labels which have not enjoyed the

Table 2.13 Example labels—price formula with prices for specification features

| | | | Offset | Flexo | Silkscreen BuM |
|----------------------------|------------------------------|------------------|-------------|--------|----------------|
| <i>Maximum print width</i> | | | 350 | 350 | 350 mm |
| Setup | <i>3 colours</i> | Setup | 500.00 | 300.00 | 300.00 EUR |
| | | Material | 150.0 | 300.0 | 150.0 meter |
| | <i>each additional color</i> | Setup | 60.00 | 45.00 | 125.00 EUR |
| | | Material | 70.0 | 120.0 | 50.0 meter |
| | | Hot foil | 120.00 | - | - EUR |
| Changeover | <i>each colour</i> | Setup | 60.00 | 50.00 | 150.00 EUR |
| Run | | Printing | 0.25 | 0.49 | 0.90 EUR/meter |
| | | Hot foil | 0.16 | - | - EUR/meter |
| | | Substrate | white | | 0.71 EUR/m2 |
| | | | transparent | | 0.73 EUR/m2 |

increased attention of the buyer, have not been the focus of negotiations and are, therefore, prices that have been carried forward over time. The new lower price, stemming from the K-Method, is a more than welcome saving for the buyer. The spikes at the lower end of the price scale, where originally quoted labels proved to be cheaper than now with the K-Method, are much more interesting. What enabled the supplier to quote such low prices to begin with? Very often, labels with the highest annual volumes are those which spike toward the bottom. Those labels are very often considered to be “strategic”. This means that the supplier offers more competitive prices for these items as for those items used by the buyer to benchmark suppliers. Very often, the supplier accepts razorblade thin margins for these strategic items to recover his margin with higher prices for the other labels. In this case the buyer has a realistic chance to calibrate the entire price formula of the K-Method using those strategic labels as reference points. This will bring down the whole price level for all the labels and yield savings for the buyer.

In short: by determining prices for each specification feature, the K-Method was able to define a price frame. For our example the price frame was as shown in Table 2.13.

With this price frame or price formula all the prices for labels can be (newly) calculated (again). This also applies to future labels of which the buyer does not yet know the specifications.

For our example of seven different labels with 29 different variants, the effort to create such a price formula may seem to be overdone. But in practice, the portfolios may have several hundred or several thousand different label specifications and variants. And for these portfolios the K-Method with its price formulas is a very efficient method to negotiate, determine and manage prices, even when in practice the price formula will have twice as many parameters as in our example.

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2016, XV, 107 p., Hardcover

ISBN: 978-3-662-48243-8