
2.1 Introduction of Performance Measurement at the Commodity Group Level

A special challenge is presented when measuring the purchasing performance on the basis of data in the profit and loss account. Employees are often very skeptical since savings by the procurement organization are frequently not shown in budgets or the P&L. It is thus possible that purchasing will report savings of 800,000 € Mio. while the company's P&L shows a loss of 1.6 € billion.¹ In that case, the reported savings by purchasing were apparently not all reflected in the profit and loss account. The assumption is widespread in many companies that only such savings may be shown which have an immediate P&L effect. This view is incorrect, however, especially when the performance measurement for individual commodity groups is not unambiguously defined. With rising market prices or in an economic upturn, purchasing can only report price increases and thus will possibly be negatively assessed, whereas with dropping market prices or in a recession, major savings can be generated and purchasing will be accordingly positively assessed. Consequently, market movements or fluctuations—especially for commodities—are to be separately considered and shown in the performance measurement. Volume movements present another challenge. While sales will constantly compare, balance and report actual and target values in its sales planning, this is generally an exception in purchasing. Also, savings impacting the profit and loss account are to be balanced out fast if additional costs are compensated in other specialist departments.² Thus, for example, renegotiating flight ticket prices with a travel agency will present significant savings. But should it come to an increasing demand which is not, however, reflected in a budget adjustment, the generated savings cannot be adequately shown or reported.³ In such cases, budgets tend to be used up by the departments to prevent

¹ Cf. Johnson and Leenders (2010), p. 25 et seq.

² Cf. Henke and Grötsch (2010), p. 22 et seq.

³ Cf. Schoddel and Krentscher (2004), p. 28 et seq.; cf. Ashenbaum (2006), p. 13 et seq.; cf. Henke and Grötsch (2010), p. 28; cf. Johnson and Leenders (2010), p. 25 et seq.

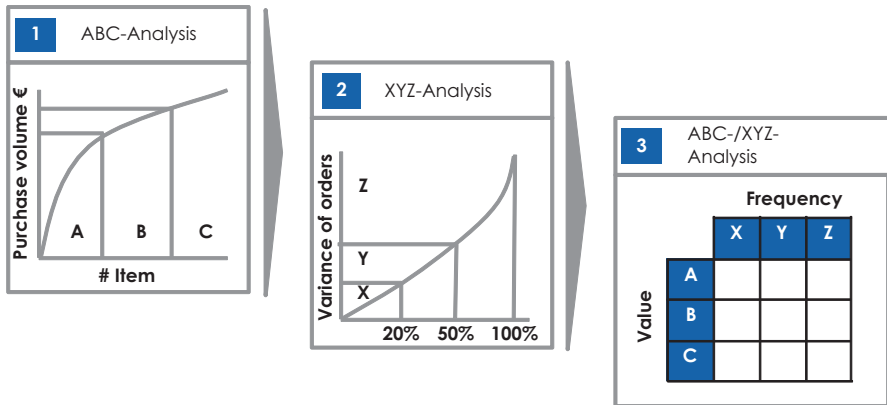


Fig. 2.1 Procurement-specific ABC- and XYZ-analysis

possible reductions in the following year. This example illustrates how difficult it can be to consistently realize savings and report them correctly. Consequently, the application of measures for performance measurements should take place on the commodity group level.

Basis of a performance measurement on a commodity group level are commodity group strategies in which the corresponding targets are defined for procurable materials, commodities, components, capital goods or services. These are derived from the purchasing strategy. A suitable instrument of analysis is an ABC/XYZ analysis which is not used, on the sales side, for the product level but, on the procurement side, for the commodity group level. This analysis results in the identification of the relevant commodity groups (A-, B- and C-groups) as well as the corresponding demand character (X-, Y- and Z-demand) (Fig. 2.1).

- A-commodity groups stand for strategic goods which have a high value but must be procured in small numbers. There is frequently a small number of specialized suppliers for them. C-commodity groups generally are of low value but must be procured in large numbers. Due to the high number of potential suppliers in this case, it is mostly relatively easy to change suppliers. With regard to value and the quantities to be procured, B-commodity groups are between the A- and C-commodity groups.
- X-commodity groups stand for constant consumption and must be accordingly regularly procured. Z-commodity groups are subject to major fluctuations in demand and procured rather rarely. The demand of Y-commodity groups fluctuates within a limited scope; for example, where the production of seasonal goods is concerned. Consequently, rarely procured commodity groups which cannot be planned ahead are not in the direct focus of optimization, although this is not impossible as such. Much rather, these commodity groups have the highest savings potential in terms of percentage; especially for ad-hoc demands, price is often no object. This raises the question to what extent purchasing is able to influence the users, i.e., the parties in need of the pertinent item.

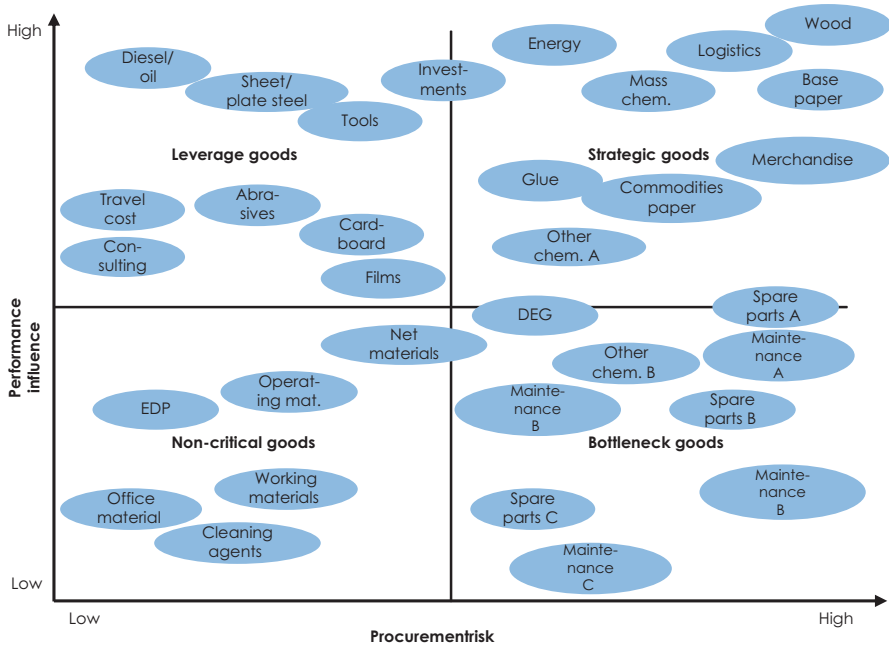


Fig. 2.2 Sample commodity groups in Kraljic portfolio. (Cf. Kraljic 1983, p. 109 et seq.)

In deriving the definition of savings objective on the commodity group level, various aspects should be taken into account—such as price fluctuations or availabilities—aside from the classification in ABC-XYZ-categories. Decisive is the importance of the respective commodity group or of the product for the measures. Especially for strategic and bottleneck goods (A-commodity groups), a differentiated view is necessary to adequately assess a possibly dominant position of the supplier (Fig. 2.2). One central aspect in the definition of objectives is a reflection on negotiating position, the market as well as product requirements. This is also required for the evaluation of the products. Due to their low specificity, standard products may be randomly exchanged while measures are more difficult to implement in the area of special raw materials or commodities, formulations or customized products. It may here be required to set up a second or third supplier for improving the company’s own negotiating position and ensuring supplies. Furthermore, indexing will be indispensable in the area of commodities traded on the market, as with cocoa, wheat, glucose or metals.

Based on the situation specifically found, qualitative objectives or a pure cost avoidance strategy may dominate. Qualitative objectives are reflected in the reduction of rejects or returns. If supplied parts are responsible for or the cause of production downtimes or rejects, they are to be improved in terms of service level and risk assessment. In this respect, supplier audits may be initiated or concrete measures implemented for service level increases which will result in savings only in subsequent steps without the cost price being changed. Such “non-conformance

costs” are frequently not allocated to purchasing but shown in the corresponding production cost centers. Misinterpretations are then possible from an overall corporate view because while one area is able to show major savings, another organizational unit has to bear these non-conformance costs. When balanced, that might possibly mean considerable additional costs. Another problem frequently underestimated in practice is the claim of saving massive costs, on the one hand, and satisfying internal and external customers, on the other hand. If, for example, buyers optimize plastic film gauges for final packaging to the absolute minimum—thus realizing significant savings in packaging material—this may result in a marked increase in returns due to customer complaints in distribution and sales. In that case, significant additional costs will result on the distribution cost side which far exceed savings on the procurement cost side.

In the commodity group strategy, sensitive subjects are to be furthermore coordinated with the individual specialist departments—such as decisions in terms of the strategic orientation of the commodity group (e.g., definition of lead buyers).⁴ It suggests itself that purchasing even goes one step further and, with regard to the individual commodity group, will directly agree in the budget planning stage upon concrete savings measures and budget adjustments with the specialist departments involved.⁵ Such a step should be supported by the CFO or management, respectively, to reinforce acceptance of the savings project.⁶

In many cases, the methods of purchasing performance measurement on the respective commodity group. Purchasing is frequently focused only on high-value commodity groups with regular consumption—so-called A/X-commodity groups—whereas smaller non-recurrent demands, such as a shredder or a high-pressure cleaner, are not in the direct focus of performance measurement. Yet, especially C-goods are most frequently ordered and they are thus the groups with the highest process costs. For these goods as well, suitable methods for performance measurement are to be selected and used.

2.2 Methods for Performance Measurement on the Commodity Group Level

To be able to measure performance in purchasing, methods should be developed and implemented in the company which are able to comprehensively determine and evaluate the performance of employees. This should take into account both savings and successful performances which are reflected in the profit and loss account as well as those not reflected in it. Aside from cost-related methods, qualitative aspects and methods are to be accordingly included in the determination of performance. Possibly, qualitative performance increases cannot be presented in monetary form

⁴ Cf. Carter et al. (2005), p. 27; cf. Henke and Grötsch (2010), p. 22 et seq.

⁵ Cf. Schoddel and Krentscher (2004), p. 28 et seq.; cf. Ashenbaum (2006), p. 2 et seq.; cf. Henke and Grötsch (2010), p. 22 et seq.

⁶ Cf. Henke and Grötsch (2010), p. 22 et seq.

or they will only show up indirectly in the form of savings in future business periods. The following presents widespread cost-based and qualitative methods. Moreover discussed will be any relevant influences and adjustments in performance measurement on the commodity group level.

2.2.1 Cost-Based Methods for Measuring Savings of Commodity Groups

Most companies use cost-based performance measurement as the central method to present the success of purchasing performance. This especially concerns the presentation of cost savings which frequently also includes cost avoidance. Cost avoidance is an expression of securing an unchanged cost level at increasing market prices.

Basically, it is differentiated among the methods presented in Table 2.1. Common to all these methods is the comparison of the actually paid price with a reference value. The use of a method primarily depends on the materials group to be evaluated and its importance for the company. Thus, the comparatively complex market price adjustment method would be typically used only for market-dependent A-commodity groups. In contrast, the simpler period-to-period comparison method should be selected for a C-commodity group with a low purchasing volume.

Period-to-Period Comparison Method The period-to-period comparison method is the most widespread form of savings calculation. In this method, the price of the prior period is compared with the price for the current period.⁷ The result presents either savings or a price increase. This method is expedient only for repeat purchases since this generally allows a direct comparison. Furthermore, the calculation must also take into account that fast obsolete commodity groups, such as computers, cannot be directly compared since newer versions will generally provide higher performance or service. Re-specifications of requisitions may also result in savings or price increases. Thus changing to a supplier with better delivery periods may result in a reduction of inventories and thus tied-up capital. If, however, the change of supplier results in deteriorating quality, shorter wear and tear periods possibly require more frequent reordering with the consequence of cost increases.⁸ Moreover, the market development is left out of account in this method. The application of the period-to-period comparison method also shows direct savings or, respectively, price increases in the P&L account. Volume changes resulting from the “hardness degree” or degree of implementation system should also be taken into account to increase the validity.

$$\sum E_{\text{merchandise group}} = (P_{\text{old}} - P_{\text{new}}) \times M \quad (2.1)$$

⁷ Cf. Jahns et al. (2007), p. 74 et seq.; cf. Hug (2011).

⁸ Cf. Rounsavill et al. (2008).

Table 2.1 Methods of measurement for the calculation of savings in procurement. (Cf. Hug 2011, p. 28)

Method	Reference value	Characteristics
Period-to-period comparison method	Historical price (prior period/last listed price)	<i>R</i> No measurement of savings with new purchases No differentiation of purchasing performance due to external effects (currency effects, market price fluctuations, volume changes)
Price quotation method	Average of the “ <i>n</i> ” best offers commercially and technically reviewed	<i>N/R</i> Validity of the method is based on the quality of the offers selected Method is easily influenced—easy manipulation Neutralization of external effects is possible
Target cost method	Target price	<i>N/R</i> Orientation of purchasing performance on the sales market Measurement of repeat and new purchases possible Relatively complex method (target cost determination/target cost splitting)
Market price index method	Market price index	<i>N/R</i> Purchasing’s negotiation strength relative to the market Indices available only for selected procurement objects (raw materials or commodities) No influence of external effects can be shown Acceptance of players (purchasing, controlling, user) to be ensured Partly great expenditure for determination of indices
Market price adjustment method	Historical price—elimination of market price fluctuations of commodities or raw materials	<i>R</i> Existing price structures are contractually fixed; mostly in the form of price escalator clauses Partial elimination of external effects possible Partly complex calculations of the history
Budget comparison method	Budget (nominal = planned price × planned volume)	<i>R/N</i> Compliance with and realization of planned savings will be presented High complexity in the implementation of price and volume planning Influence of purchasing on the P&L account can be made transparent

R suitable for repeat purchases, *N* suitable for new purchases

where

$E_{\text{commodity group}}$ Savings per commodity group in € p. a.
 P_{old} Price, old, per item in €
 P_{new} Price, new, per item in €
 M Planned volume per item in pieces p. a.

Example:

$$\begin{aligned} E_{merchandise\ group,\ ex.1} &= (\text{€ } 10.50 - \text{€ } 9.50) \times 10,000\ pcs. \\ &= \text{€ } 10,000\ (savings) \end{aligned}$$

$$\begin{aligned} E_{merchandise\ group,\ ex.2} &= (\text{€ } 10.50 - \text{€ } 12.00) \times 10,000\ pcs. \\ &= \text{€ } 15,000\ (price\ increase) \end{aligned}$$

Price Quotation Method The price quotation method is primarily suitable for the performance measurement of non-recurrent procurements and hardly for the repeat procurement of products or services. The focus of attention is here the adequate “technical and commercial” comparability of the available offers.⁹ To ensure corresponding comparability, at least three to five offers from potential suppliers should be available. Furthermore, detailed preliminary work is to be done regarding the invitation to tender and the requested specifications.¹⁰ The more leeway a supplier has in its potential interpretation of the invitation to tender, the more diverse will be the spread of offers. A good characterization of the basis of offers is the price spread and variance between the lowest and highest priced offers.

On the assumption that the offers are comparable, the basis of comparison used will be the arithmetic mean of the offer by the best potential suppliers included in the short list for negotiations. However, the method may also be carried out as a comparison of the selected offer with merely one comparison offer. To prevent any excessive influence by purchasing, representatives of the specialized areas should be involved in the negotiations. Ideally, a joint, cross-functional evaluation of the offer should be made by means of an assessment model. Nonetheless, this method is often criticized since the buyer’s manipulative influence on supplier selection and offer preparation is rather high. Thus it might be implied that, in the first round of selections, buyers will tend towards high-priced offers so that they can subsequently show major savings.

Purchasing performance is presented as a “delta” between the arithmetic mean of the offer to the actual order placement value.¹¹ The order placement value, determined of price and the corresponding quantity unit, is fixed or locked in at the time of order placement. Subsequent increases or reductions resulting within the scope of assembly or installation are usually accordingly adjusted in hardness degree 5.

$$VP = \mathit{arithm}_{potential\ supplier\ negotiation} - Award\ Value \quad (2.2)$$

where

VP Final comparison price per item in €
 $\mathit{arithm}_{potential\ supplier\ negotiation}$ Arithmetic mean of the offers in €

⁹ Cf. Hug and Weber (2011), p. 48 et seq.

¹⁰ Cf. Hug and Weber (2011), p. 42 et seq.

¹¹ Cf. Rounsavill et al. (2008).

Material		72.21%
Material used	€ 2,181	
Parts complementarily purchased	€ 429	
Direct manufacturing costs		9.73%
Depreciations	€ 171	
Labor costs	€ 192	
Other	€ 223	
Overhead		6.36%
Production	€ 843	
Sales	€ 683	
Administration	€ 100	
Development	€ 642	
Other	€ 157	
Other		11.69%
Special direct cost	€ 384	
Profit	€ 345	
Total (without discount)		
Total	€ 6,350	100.00%

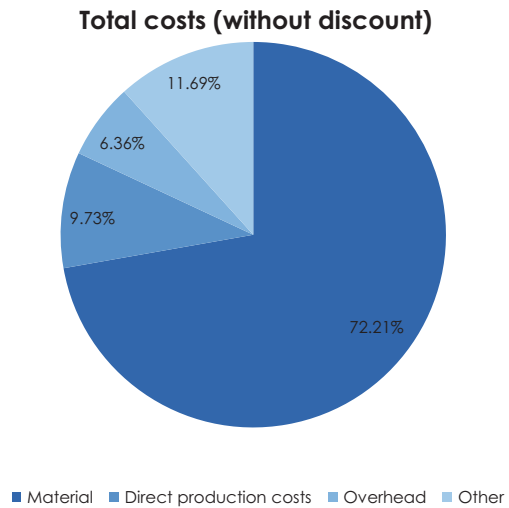


Fig. 2.3 Example of a cost breakdown analysis in the target cost method

Target Cost Method The target cost method, also called target costing, was developed in Japan in the 1970s. The objective is a greater orientation on market prices, especially on the sales price.¹² However, this requires sound understanding of the product and the market on the part of the procurement organization. In many cases, value-analytical approaches are used to determine the respective price components—the so-called “cost breakdown analysis” which will then be used as another basis for decisions (Fig. 2.3). This determination is based on standard calculation methods as well as reverse engineering to break down the end product into individual components to thus determine the cost drivers.¹³ In this respect, the “identification of weak points in the structure of the cost of materials” is of major significance.¹⁴

The target cost method distinguishes different procedures in purchasing. The classic variant is to derive the targets from the end product sold, like a ballpoint pen (Fig. 2.4). If the company sells this ballpoint pen for 1.50 € while the market price has been ascertained at 1.30 €, the savings objective for the coming year would be 30 cents so that a sales price of 1.20 € can be realized. In a second step, a product cost analysis is necessary to be able to determine the individual price components

¹² Cf. Wildemann (1999), p. 54 et seq.; cf. Jahns et al. (2007), p. 51 et seq.

¹³ Cf. Hug and Weber (2011), p. 47 et seq.

¹⁴ Wildemann (1999), p. 54 et seq.

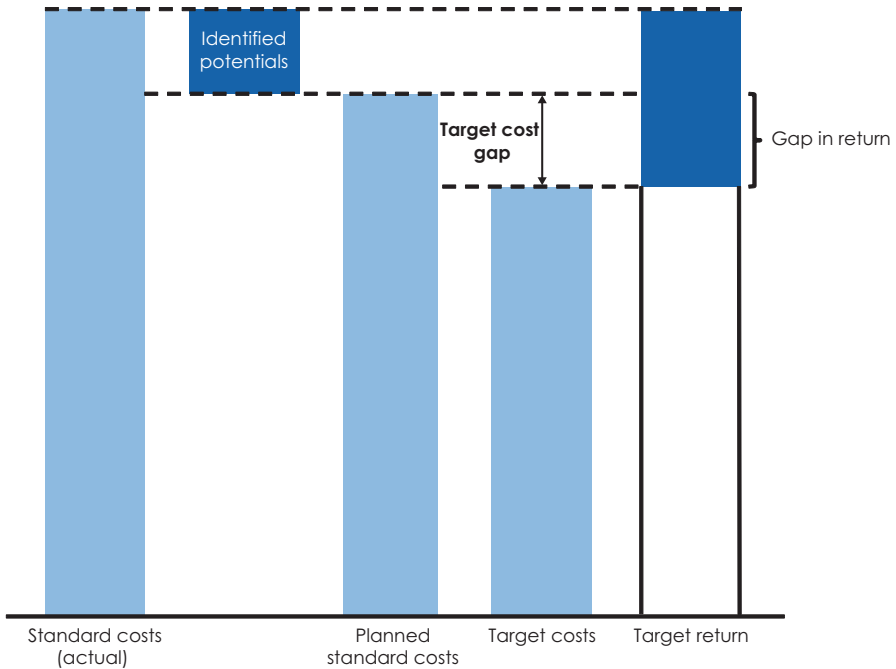


Fig. 2.4 General presentation of the target cost gap. (Cf. Buck 2005, p. 457)

of the complementarily purchased materials. Subsequently, the target costs per item are determined. The last stage finally includes the definition of purchasing activities and the corresponding measures. This may be re-specifications, invitations to tender, re-negotiations or calculation workshops with suppliers.

Another, slightly modified form of the target cost method relates to supplier-specific measures initiated by purchasing. Especially with new suppliers, savings potentials result in the course of time due to a learning curve. Thus, a supplier having originally offered casting parts for 500 € could make price reductions due to the optimization of production lot sizes, on the basis of actual requisitions, and on the basis of warehousing and transport. A good opportunity for price optimization is already provided in the negotiating phase in which a target system can be established with key suppliers. In such a system, further optimizations can be determined in sequences so that the supplier has to reduce the price by another 5% after expiration of the first year, and by another 3% in the second year. In turn, the supplier will be assured of continued purchases. As a supplement, supplier workshops or supplier days may be held to ascertain further cost reduction potentials. The target cost method can, moreover, be combined with the benchmarking method or with electronic auctions to actually realize the targeted market prices.

In the target cost method, savings will be determined exclusively in terms of the target price. However, savings can be much higher if the old purchase price is above

the target price. It thus needs to be defined which calculation method is to be applied. As a rule, the specified target price is compared with the realized price.

$$\sum ZE_{product} = (ZP_{new} - P_{new}) \times M \quad (2.3)$$

where

$ZE_{product}$	Target price savings per product in € p. a.
ZP_{new}	Target price, new, derived from market price per item in €
P_{new}	Realized price, new, per item in €
M	Planned volume per item, in pieces p. a.

Market Price Index Method In the market price index method, the purchasing performance is evaluated in relation to a suitable index.¹⁵ Indices are available, for example, for commodity groups such as timber, various metals and other commodities. If the buyer is able to realize a price below the index, this will generate savings. Let us assume that a ton of copper was purchased at a lower price than the index value, then it was purchased under the market value and savings can be accordingly shown. However, this method can only be used for indexed products—thus mostly commodities. Indices are generally published by independent organizations and can thus be transparently substantiated. The method therefore is relatively robust when it comes to attempts of potential manipulations.

$$\sum E_{commodity} = (MP - P) \times M \quad (2.4)$$

where

$E_{commodity}$	Savings per commodity in € p. a.
MP	Market price, derived from index per product in €
P	Realized price per product in €
M	Planned volume per item, in pieces p. a.

Market Price Adjustment Method The market price adjustment method takes into account the market developments by means of using representative indices and the old price basis. This is a combination of the period-to-period comparison method and the market price index method.¹⁶ The advantage of the market price adjustment method is that the market development can be taken into account and the purchasing performance can be accordingly evaluated more objectively. This applies in particular for a comparison of the relative change of the market and the purchase price. Essential is, in this respect, the definition or the determination of the respective commodity percentage which is not always easy to be presented. For the procurement of steel tubes—with a commodity percentage of 50% and a 20%

¹⁵ Cf. Jahns et al. (2007), p. 74 et seq.; cf. Hug (2011).

¹⁶ Cf. Jahns et al. (2007), p. 74 et seq.

increase in market price during the comparison period—the supplier’s demanded new price should not be more than 10% above the original price. The applicability of this method implies, however, that it concerns recurrent and comparable demands,¹⁷ such as for the new invitation to tender or a contract extension for production materials. Alternatively, the determination regarding a commodity percentage and the corresponding index may also be used for new products.

The calculation of purchasing performance in the area of corrugated cardboard and solid cardboard is frequently index-based on the relative use of materials. The respectively negotiated price from the contract is used as the basic value. The date of this contract conclusion is used as the starting base. For corrugating material, the index could then be 327 € which would be equivalent to 100%. This price is consequently the basis for determination of the purchasing performance. For a final derivation of comparison prices, the material ratio and the composition of materials (essential material components, e.g., testliner white, corrugating material and testliner II) are to be first defined in the respective commodity group. Used will be in this respect the development of the respective index value or price from the date of the original price settlement until the month of the new settlement. If the index is 440 € in the year 2011, this will be a market-related price increase of 113 € or 35% accordingly. If the material ratio of the corrugating material is specified at 60% from the end price, a straight, market-related price increase of 21% will result.

Example:

$$VP = RVP \times NMatQ + RVP \times MatQ \times \left(1 + \sum_{i=1}^n MatA_i \times IndE_i\right) \quad (2.5)$$

where

<i>VP</i>	Final comparison price per item in €
<i>RVP</i>	Framework contract price per item in €
<i>NMatQ</i>	1 – material ratio (percentage of costs not to be explained via the use of materials, in percent)
<i>MatQ</i>	Material ratio (percentage of material in total costs, in percent)
<i>i</i>	Specific material
<i>n</i>	Volume of materials
<i>MatA</i>	Percentage of specific material in relation to the total material, in percent
<i>IndE</i>	Index development of the specific material in percent

Example:

$$RVP = 10$$

$$MatQ = 50\%$$

¹⁷ Cf. Hug and Weber (2011), p. 45 et seq.

$$\text{NMatQ} = 50\%$$

$$\text{MatA}_1 = 40\% \text{ (percentage material 1)}$$

$$\text{MatA}_2 = 60\% \text{ (percentage material 2)}$$

$$\text{IndE}_1 = 20\% \text{ (index development, material 1)}$$

$$\text{IndE}_2 = 25\% \text{ (index development, material 2)}$$

$$\text{VP} = \text{€}10 \times 50\% + \text{€}10 \times 50\% \times (1 + 40\% \times 20\% + 60\% \times 25\%) = \text{€}11.15$$

The amount of 11.15 € presents the comparison price which was evaluated from the past with today's market development.

Savings are calculated based on the comparison price adjusted around the market development:

$$\sum E_{\text{merchandise group}} = (\text{VP} - P_v) \times M \quad (2.6)$$

where

$E_{\text{commodity group}}$	Savings per commodity group in € p. a.
VP	Final comparison price per item in €
P_v	Price negotiated per item in €
M	Planned volume per item, in pieces p. a.

Example:

$$E_{\text{merchandise group}} = (\text{€} 11.15 - \text{€} 9.50) \times 10,000 \text{ pcs.} = \text{€} 16,500$$

If it is assumed that the negotiated price is 9.50 €, a planned volume of 10,000 pieces will result in a market-adjusted performance of 16,500 €. These savings would thus be the starting base for the implementation stage in hardness degree 5. It should be noted in this connection that the performance only relies on the planned volume to be evaluated via the volume adjustment in the implementation stage.

Project Purchasing and Budget Comparison Method In project purchasing and here especially in the area of capital goods procurement, purchasing as well as the specialist department are often faced with the challenge of identifying plausible savings. The comparability of demands can hardly be determined since non-recurrent demands are concerned. Although for measuring the purchasing performance, purchasing will fall back on comparisons with the arithmetic means of offers, this is not a parameter shown in the P&L account or the balance sheet. The only relevant balance sheet or P&L account items here are planned project or investment budgets. These are connected with various challenges for the participants which primarily result from increases or, respectively, decreases in the budgets within the course of the project and

the corresponding planning (see hardness degree 5 and 6). However, project managers and those responsible for finances attach special importance to a successful project conclusion “in time and in budget”. Accordingly, they must also be the objectives for purchasing. For the implementation, however, purchasing faces numerous challenges which it is generally not responsible for—such as market price changes over the period of time of the project. This is especially critical when projects are planned over several years and when they are calculated with product prices from the first year of planning. This is frequently the case for capital goods so that originally planned budgets are quickly obsolete. That circumstance presents a central problem of the budget comparison method. Already a market price related change of 20% over 2 years may render obsolete any original budgeting. The project team should accordingly distinguish four stages when the budget comparison method is used:

- Phase 1 presents the basis for project planning and the offer (Example: Electrical work at a price of 500,000 €).
- In phase 2, the revised project budget after contract award is to be determined. *Example:* Changed prices for materials on 01/10/2011.
- Percentage of materials: 30%
- Percentage of personnel: 70%
- Increase in commodity and raw material prices: 30%
- Increase in labor costs: 5%

$$\begin{aligned}
 \text{Budget}_{\text{new}} &= (30\% \times \text{€ } 500,000 \times 130\%) \\
 &\quad + (70\% \times \text{€ } 500,000 \times 105\%) \\
 &= \text{€ } 195,000 + \text{€ } 367,500 = \text{€ } 562,500
 \end{aligned}$$

That means, in the new consideration of the project budget, the spectrum to be ordered would already have to be adjusted in costs by 12%. As a rule, this adjusted budget would be the newly revised budget within the scope of the project kickoff. If companies do not make this adjustment in the determination of performance and will start from the originally offered scope, i.e., 500,000 €, this must be used as the basis for calculation.

- Phase 3 renders the given budget more concrete on the basis of the contracted scope of project performance. In the example, purchasing awarded this scope of performance for 520,000 €. The result would consequently be a price increase by 20,000 € if there is no new budgeting prior to the project start. Otherwise purchasing could show a performance result of initially 42,500 €.
- The critical phase 4 begins after acceptance—either internally toward the supplier or the end customer. In this phase at the latest are increases or decreases respectively to be taken into account. In the example, two supplements were required which resulted, in sum total, in an order value of 15,000 €. For the performance calculation in consideration, that means an increase of 35,000 € compared to the original budget or, respectively, savings of 7,500 € compared to the adjusted budget.

As the example shows, either savings or increases can be shown depending on the basic budget. As a result, in this area as well, it should be differentiated between the performance measurement with and without impact on the profit and loss account.

The specification of budgeting first of all depends on the depth of detail of planning. Frequently, planning comprises the essential sections of a project. Cost planning is subsequently generally done in a spreadsheet program, in an ERP system or a project planning program. Ideally, the planner will define the required budget on the basis of external offers or historical planning experiences.

Within the scope of project handling and processing, the individual budget items are to be transferred into a structural project plan in the ERP system. It is necessary that the developed structure will be uniformly implemented in purchasing and ideally in the entire company. Finally, performance measurement should be effected after acceptance of the project including increases and decreases. Otherwise, there is the risk of incomplete reporting about the purchasing performance actually rendered within the course of the project. While at the beginning of the project, steel construction within the scope of the construction project is awarded for a 300,000 € lower price compared to the budget, there might be an increase in price by 100,000 € after acceptance. This will occur in particular if other project structure items are used for additional services or performance within the course of the project—such as a cost collector absorbing calculation risks. Also, decreases are seldom rigorously tracked and pursued by purchasing. If a specific scope of performance is dropped in project implementation, it will be actually defined in the construction meeting; however, it is generally not consistently recorded in monetary terms. It cannot be taken for granted that, in such cases, the corresponding supplier will actively approach purchasing to make a supplement. On the other hand, in case of increases, the supplier will mostly actively request the additional costs incurred. In both cases, more intensive collaboration will be necessary for objective performance recording as well as a conclusive documentation of any possible “side arrangements”.

Situation-Specific Suitability of Cost-Based Methods for Performance Measurement

The sections above presented different methods for performance measurement on the level of commodity groups as well as their reference values. However, the characteristics of different commodity groups are to be taken into account. Not every method is suitable for performance measurements in capital goods purchasing. Generally, distinctions are made between new purchases and identical as well as modified repeat purchases. For new purchases, there are no historical comparison prices within the company. Even for modified repeat purchases, only conditional comparisons can be made. Due to product changes—such as increased power rating e.g., for computers—the models and their prices can no longer be compared with each other. This results in difficulties in the application of the performance measurement methods. On the other hand, for identical repeat purchases, the same product or the same service is procured time and time again, and accordingly, the company has historical prices available which may be used for comparison purposes. Figure 2.5 shows which methods are suitable for commodity groups with different procurement characteristics.

suitable to be used with goods for which historical prices are available and which are highly dependent on commodities at the same time.

Overall, the cost-based methods of savings measurement shed light on only one side of purchasing performance. For fully and comprehensively ascertaining the performance of the procurement organization, other methods should be used which also include qualitative features.

2.2.2 Determination of Qualitative Performance for Commodity Groups

Today, financial savings are the dominant calculation basis for purchasing performance measurement; they are reflected in the P&L account above all. The area of qualitative and thus not directly monetarizable savings is often left out of account in practice so that the actual purchasing performance is generally underrated. Consideration of the solely directly monetarizable savings in the sense of a target system focuses too much on cost price reductions. At times, this will negatively affect the motivation of employees with procurement assignments to realize further potentials. Actually, various evaluation factors are distinguished—such as price, quality, delivery period, warranty etc.; yet, when incentives are held out as a correspondingly one-sided promise, employees will tend to prefer a supplier contributing best to the employee's own financial target achievement. As a result, additional qualitative parameters are required in the evaluation of the purchasing performance, which are further to be taken into account in the buyers' individual target agreements.¹⁸

Cost Avoidance The area of not directly monetarizable performance includes a widespread approach—cost avoidance.¹⁹ It is often difficult to provide an objective presentation of cost avoidance effects, all the more so since well-known prejudices exist, such as the already mentioned “glossing over” of savings. Accordingly, it is highly important to measure and record cost claims by suppliers.²⁰ Successful negotiation results such as price reductions, quantity rebates or discounts can thus be concretely shown. For example, if a cost increase is evaded through negotiations, this will fall into the category of cost avoidance and can thus be allocated to the procurement organization. Moreover, the analysis of cost avoidance effects is suitable to perform corresponding market observations. Assuming, for example, the majority of suppliers of a commodity group demands a price increase, that will present a plausible indication for a potential movement on the market. Especially in the area of projects business, increases and supplementary claims are not unusual and as “lessons learned”, they could enter into subsequent project calculations. To what extent these claims are justified is to be evaluated separately. Should numerous price claims occur

¹⁸ Regarding the design or arrangement of incentive systems in purchasing see Sect. 2.7 in detail

¹⁹ Cf. Ashenbaum (2006), p. 13 et seq.; cf. Schild (2008), p. 18 et seq.; cf. Johnson and Leenders (2010), p. 27 et seq.

²⁰ Cf. Ashenbaum (2006), p. 4. et seq.

for A-commodity groups, the market reaction is to be reflected with the sales organization and with management to consider whether to possibly pass on price effects to the company's own customers. Complete recording thereof may also kick up preventive activities to be able to include, early on, in the calculations of budget plans for the coming years any possible price increases and supply market developments.

Moreover, cost avoidance plays a psychological role connected with the quantitative evaluation of price demands. The buyer is encouraged to deal and grapple with the additional demand and evaluate it. Thus it is not unusual that suppliers demand sweeping increases for the supplier's product portfolio from 5 to 10%—in each case making reference to rising wage costs and commodity prices. If buyers are in direct negotiations with suppliers, the creditors' turnover and the corresponding receivables are partly only roughly estimated. Moreover, weighted evaluations on the product level would be desirable. Problematic in this respect is the evaluation of quality improvements with unchanged prices.²¹ These generally evade a price increase along the life cycle (e.g., due to lower maintenance costs in operations), applicable in particular for capital goods procured.

Within the scope of an established cost avoidance reporting system, the monetary assessment of any negotiation success can be determined in a rough estimate. Savings from evaded or bypassed price increases or cost avoidances are to be shown as precisely as possible, and price claims must be verifiable and plausible. Moreover, the new price must be correspondingly negotiated and documented. Determinations of price claim and negotiated result are to be shown in a weighted presentation of the respective product quantities per year multiplied by the prices:

$$\sum KV_{\text{merchandise group}} = \left(\sum_{i=1}^n PfA_i \times M_i \right) - \left(\sum_{i=1}^n PvA_i \times M_i \right) \quad (2.7)$$

where

$KV_{\text{commodity group}}$	Cost avoidance per commodity group in € p. a.
PfA	Price demand per item in €
PvA	Price negotiated per item in €
M	Planned volume per item in pieces p. a.
i	Item

Quality Increase Of similar importance as cost avoidance is the implementation of qualitative objectives within commodity groups.²² They are an important dimension of the non-monetary performance presentation in purchasing. Decisive are not only the adopted competitive strategy but also the purchasing and commodity group strategies to be connected with it. In case of a targeted differentiation strategy via quality leadership, it is absolutely advised to provide for intensive coordination between the purchasing and other specialist departments (especially production,

²¹ Cf. Wyld (2003), p. 408

²² Cf. Buchholz (2002), p. 369; cf. Ashenbaum (2006), p. 3 et seq.; cf. Schild (2008), p. 18 et seq.

sales, as well as research & development) to avoid competing objectives. Aside from a basic quality orientation, other qualitative objectives can be additionally defined, dealing e.g., with re-specifications of components or service materials. For instance, if there is the possibility of a packaging change which reduces the use of materials or relies on alternative ecological basic materials, this can also be shown as a qualitative success. To improve a company's CO₂ balance, it is highly important in some major groups that their vehicle fleet is rendered ecologically acceptable. "Gas guzzlers" are removed from the fleet of vehicles and CO₂ emissions of every vehicle are recorded and presented. Also, companies have a similar situation when it comes to the use of electricity providers and the use of regenerative sources. In these cases as well, "qualitative" success or performance must be measured.

Other areas of potential quality increases relate to the improvement of framework conditions of real net output or of product quality, especially if the activities kicked off by purchasing will result in tangible end customer benefits or reduce rejects in production.

Qualitative objectives in procurement include, inter alia:

- Quality improvement of manufactured products or services rendered
- Compliance with ecological requirements
- Increase of warranty/guarantee periods
- Reduction of downtimes or repair periods
- Determination of goodwill rates and substitute regulations
- Lot size optimizations
- Shortening delivery periods
- Optimization of product life and operating performance (e.g., in machine hours)
- Improvement of service level
- Ensuring user-friendliness
- Safeguarding compatibility with existing systems and technologies
- Initiation of supplier innovations or, respectively, integration of supplier in product development
- Introduction of upgrades with travel management (e.g., for airline tickets, hotel accommodations or rental vehicles)
- Agreement on free-of-charge stockpiling at the supplier
- Reducing rates of complaints

A strategic decision to be separately considered and connected with additional costs is, for example, the qualitative improvement of protective work clothing. If employees complain about the poor quality of protective clothing or about generally inadequate protection, this may result in the deterioration of hazard situations and influence the company's standing in public. To prevent such negative effects, purchasing may improve processes by appointing new suppliers offering better safety and security. Despite higher costs for protective work clothing, such measures may increase general safety and employees' satisfaction and thus possibly also the company's productivity.

The service area with service partners presents a special challenge regarding the qualitative evaluation of purchasing performances since services are individually perceived and—according to the *uno actu* principle—the provision and consump-

tion of the service may coincide in terms of time. Service rendered may be very differently evaluated by the various recipients of services. Particularly sensitive in service procurement are the areas of temporary work, marketing, agencies, freelancers, catering or IT-service, since pertinent reference values are frequently missing. With a comparison of offers in the personal environment of service providers, the argument is often put forward that potential supplier A would use higher qualified personnel but, in turn, would be more expensive than potential supplier B. In this case, the determination of savings and performance will be difficult since not only possible savings in time and costs going hand in hand with the quality of the service personnel would have to be recorded and included in the determination of performance. Due to the immaterial nature of the matter, it is recommended to first separate the material and the work performance required for provision of the service and evaluate both separately. However, any calculation of performance in the above-mentioned commodity groups can only be applied to a limited extent. If non-comparable solutions or concepts are concerned, such as the preparation of a marketing concept or consulting services, they can hardly be compared among each other. Consequently, performance must be based in the qualitative field on previously defined parameters which are ideally evaluated by a cross-functional team and thus several specialist perspectives are connected with each other. Supplementarily, performance evaluations should be done at regular intervals by means of standardized recording sheets which are to be filled out not only by the user but also by the affected specialist department and by purchasing. Ideally, previously aimed at service levels can be defined which are each based on various activities and improvement measures. In the area of creative services, as e.g., consulting services, a similar procedure is advisable where a catalog of criteria is specified in advance and used as the basis within the scope of competition of potential suppliers.

Not only for the service sector in the narrower sense but for the entire quality and innovation area, a balanced evaluation with qualitative and quantitative factors should be implemented for the performance measurement. Only with a transparent method coordinated between the functional areas will it be possible to make procurement decisions which go hand in hand with savings at the same quality orientation.

Sustainability Orientation Environmentally compatible products or the guarantee of ecological and social sustainability have increasingly gained importance in recent years. The basic orientation towards these aspects should be initially specified and laid down by the company and also implemented in procurement. However, especially in purchasing, a target conflict may occur between the most economical price and compliance with sustainability criteria; and it should therefore be clearly defined which aspect is to be weighted higher in case of doubt. This is connected with a threshold value to be fixed and as of which a change is necessary from pure cost orientation to sustainability orientation taking into account any possible additional expenditures. As a result, the dominant objective of purchasing continues to be the identification of an ecological top potential supplier which has the corresponding certifications. In this respect, independently awarded quality seals—such as BSCI (Business Social Compliance Initiative), FSC (Forest Stewardship Council)

or Fairtrade—may be helpful as they stand for the various sustainability criteria at suppliers. Quality seals predominantly relating not only to environmentally friendly and gentle production but also to consumer health are called “green labels” and support the current consumer trend of health and environmental awareness. This includes various bio-seals, the MSC seal (Marine Stewardship Council) for sustainable fishing or the European eco flower certificate.²³ Even today, consumer goods manufacturers in the garment sector are still fighting against prejudices by special interest groups alleging a lack of social and ecological responsibility. Especially suppliers with production facilities in Asia often using child labor or unsocial labor conditions are frequently in the focus of public criticism.

Accordingly, purchasing performance measurement should take into account the sustainability criterion—especially in case of procurement from emerging nations and third-world countries (non-OECD). While responsibility for safeguarding sustainability has in the past been generally transferred to the supplier, it is now increasingly shifting towards the principal or ordering party. Because in case of a breach of the principles of sustainability, the buying company especially will have to bear the damage in reputation. On the basis of this development, the sporting goods manufacturer Nike issued a first sustainability guideline for its suppliers in the year 1992.²⁴ In this guideline, the so-called code of conduct, Nike defines concrete ecological and social objectives as well as clear forms of collaboration. According to it, suppliers agree to pursue and continuously improve common objectives—for instance, respecting workers’ rights, providing a safe working environment, avoiding pollution, as well as ensuring the health and satisfaction of the workforce. Moreover, Nike defines clear prohibitions of child labor or forced labor.²⁵ An increasing number of companies are meanwhile following this trend, not least due to the increasing pressure of the public, governments or other special interest groups. In general, the codes of conduct not only apply for suppliers but are to be used especially in the company itself and also serve as a guide for the workforce.²⁶

For purchasing, it is necessary to firmly anchor the principles of sustainability in the target system to ensure their implementation for all relevant commodity groups. Also to be noted is the continuous review of the suppliers’ compliance with these guidelines since they are mostly required on a voluntary basis and have no legal foundation. To ensure compliance with the guidelines, internal control systems may be introduced as well as external audits of suppliers or the introduction of fines, exclusion from partnerships with other companies, or other penalties.²⁷ To clearly render success and performance in sustainability measurable in purchasing, the percentage of sustainable suppliers should be measured and increased, if necessary. In this respect, management especially should set a positive example of sustainability and provide buyers in the corresponding commodity groups with suitable incentives (e.g.,

²³ Cf. Hart et al. (2010), p. 123 et seq.

²⁴ Cf. Locke and Romis (2006), p. 6 et seq.

²⁵ Cf. Locke and Romis (2006), p. 6 et seq.

²⁶ Cf. Wulf (2011), p. 19 et seq.; cf. Saleem (2006), p. 23 et seq.

²⁷ Cf. Mamic (2004), p. 57 et seq.

realized CO₂ reduction for the procurement transports of the individual commodity group). Anchoring the concept of sustainability in corporate and purchasing strategy may also contribute to heighten the personnel's awareness of this subject matter.

Requirements Conformity The requirements or guidelines conformity of procured goods and of the corresponding suppliers is gaining increasingly in importance. Especially within the scope of global sourcing, imitations or falsely certified products may be purchased which are not in compliance with the applicable requirements and guidelines. In this context, securing declarations of conformity across the supply chain and various suppliers is also playing a role. Predominantly in areas with obligatory registrations—as e.g., in the pharmaceuticals industry, the medical engineering sector, the food industry or the electrical industry—special registration prerequisites and examination regulations of the end products are to be ensured. In the case of a new product, a successful supplier certification may be a qualitative factor.

In performance measurement, the requirements and guidelines conformity may be displayed in simplified terms by the number of certified suppliers. Depending on the economic factor and sector of the industry, certifications play different parts. Accordingly, suitable criteria should be taken into account in performance measurement especially in industries reacting particularly sensitively to the compliance with requirements and guidelines. The certifications maintained with suppliers should be up-to-date in each case which may possibly be accompanied by higher real net output costs which the buyer is to bear on a prorated basis. Furthermore, additional costs may be incurred for continuous reviews as well as certifications.

2.2.3 Influences and Adjustments Regarding the Performance Measurement of Commodity Groups

Purchasing performance is characterized by many factors which cannot be influenced by the buyer. Essentially concerned are volume or quantity changes, market developments as well as currency effects.²⁸ An adjustment is frequently necessary to present the actually realized purchasing performance in a commodity group. It is a matter of emphasizing that the factors have their impact on the profit and loss account or on the balance sheet and consequently are accompanied by a positive or negative value effect. Within the scope of performance measurements, various factors are to be isolated from the purchasing performance and separately shown because they cannot be influenced by purchasing.

Market-Adjusted Performance Measurement In practice, purchasing departments frequently receive good ratings in times of recessions. If market prices increase for individual commodity groups, the persons responsible for purchasing are quickly under fire since their value added is frequently measured on the basis

²⁸ Cf. Buchholz (2002), p. 363 et seq.; cf. Ashenbaum (2006), p. 4 et seq.; cf. Jahns et al. (2007), p. 74 et seq.; cf. Schild (2008), p. 18 et seq.; cf. Johnson and Leenders (2010), p. 25 et seq.

of comparison of current purchase prices and those of the prior period which is not very efficient. Market prices are frequently determined by exogenous effects outside of the scope of action of the procurement organization. Other exogenous influences are, for example, inflation or currency rate fluctuations which will later be discussed in more detail. This category also includes reductions in demand due to crisis situations.²⁹

Major influencing factors determining the price of a purchased good or a service procured are market price changes of commodities and raw materials, utilization of production capacities at the supplier, supplier's expected sales and revenue development; also, the customer's strategic importance for the supplier, as well as the quality and resilience of the supplier relationship related to the individual latitude in negotiations by the supplier's contact partner. An examination of these influencing factors will quickly show that a simple period-to-period comparison of two prices will provide an imprecise indication for evaluating a purchasing performance. Ideally, a model for performance measurement should meet practical requirements; i.e., it should be easily understandable and assessable on the basis of objectively measurable criteria. Many commodity groups are directly coupled with market indices—thus e.g., in the case of cocoa, cotton, copper, or the like. The indices reflect current price developments on the markets and can generally be transparently tracked. On the other hand, such aspects as the utilization of supplier-specific capacities are, in practice, hardly to be objectively determined in a specific market. Likewise, it is hardly possible to conclusively present plausible information about the quality or strategic importance of the customer and supplier relationship. It is accordingly not recommended to integrate such criteria into a practicable performance measurement model. If specific dependencies from market prices are taken into account in the performance measurement of a purchased good, this may be reflected by means of the market price adjustment method.³⁰ However, the applicability of this method requires recurrent and comparable demands.³¹

Currency-Adjusted Performance Measurement For many companies, procurement markets today are characterized globally, and purchasing in different currencies is part of the daily business. The worldwide supplier base actually opens up numerous potentials but new risks will also arise—among them currency rate fluctuations. In parts, the exchange rate of a currency is used by national economies as a strategic means for increasing the export rate. Unfavorable currency rate changes can cause massive price hikes for imported goods and materials for the purchasing company. These are analog effects and not within the buyer's sphere of influence so that benefits and drawbacks are not to be assessed as purchasing performance or failure. If the U.S. dollar is devalued by 10% within one year, that will provide savings

²⁹ Cf. Weber and Zubler (2010), p. 38 et seq.

³⁰ Wildemann (1999), p. 54 et seq.; cf. Buchholz (2002), p. 363 et seq.; cf. Jahns et al. (2007), p. 74 et seq.

³¹ Cf. Hug (2011).

Table 2.2 Sample calculation for the currency adjustment in performance measurement

	Period 0	Period 1
Exchange rate for 1 €	\$ 1.45	\$ 1.30
Price	\$ 1,000	\$ 900
Unit price in €	689.66 €	692.31 €
Quantity	100	100
Total cost in \$	\$ 100,000	\$ 90,000
Total cost in €	68,966 €	69,231 €
Savings effect	265 €	
Purchasing performance	100 pieces \$ 100 = \$ 10,000; \$ 10,000/1.30 = 7,692 €	

for a buyer within the euro area which cannot be allocated to purchasing, however.³² Nonetheless, these changes are relevant for a company's CFO because, on the one hand, the foreign currency risk must be managed and hedged; on the other hand, this effect is reflected in the balance sheet.³³ Accordingly, purchasing is urged to show its performance currency-related and in a differentiated manner.

Example:

A purchasing department is resident in Germany has a supplier in the U.S.A. A valid price base of \$ 1,000 was fixed for a product. Through negotiations, this price has now been reduced to \$ 900 and thus savings of \$ 100 per item have been realized. In the same period of time, the dollar exchange rate was reduced from \$ 1.45/€ to \$ 1.30/€ (Table 2.2).

The negotiation success of \$ 10,000 is completely neutralized by the currency change so that the application of the changed currency rate will result in a price increase of 265 € which is to be shown in the P&L account. However, the purchasing department may report the purchasing performance of \$ 10,000 or 7,692 € as non-monetarizable performance.

Inflation-Adjusted Performance Measurement In purchasing, framework agreements with a term of several years are often concluded especially with strategic suppliers. For the most part, the initially agreed prices remain valid over this period of time and do not change. After expiration of this framework agreement period, a price adjustment will generally follow which may correspondingly result in either a reduction or an increase. For the buyer, it is necessary to evaluate how the market developed within the term of the framework agreement. As shown, indices are used for commodity groups which are volatile and heavily dependent on commodities. For all remaining commodity groups, the rate of inflation is to be used at least for the evaluation. The central issue is to what extent the supplier wants to implement a price adjustment according to the general price increases or possibly aims at an

³² Cf. Buchholz (2002), p. 363 et seq.; cf. Jahns et al. (2007), p. 74 et seq.; cf. Schild (2008), p. 18 et seq.

³³ The currency risk can be secured jointly with the supply risk in the supply chain via so-called "natural hedging". Cf. Hofmann (2010), p. 118 et seq.

additional increase in margins. Accordingly, the evaluation of an old price is to be adjusted by the change in the rate of inflation.³⁴

$$\text{Savings} = (\text{Price}_{\text{old}} \times (1 + \Delta r)) - \text{Price}_{\text{newly negotiated}} \quad (2.8)$$

where

Δr Change of the rate of inflation in the period under review

Example:

Price old: 10.00 €, valid from 1/1/2008 to 31/12/2010

Price newly offered: 11.50 €, per 1/1/2011

Price newly negotiated: 11.00 €, per 1/1/2011

Inflation rate r : 2008: 2.6%; 2009: 0.4%; 2010: 1.1%

$$\text{Saving} = (\text{€ } 10.00 \times 1.041) - \text{€ } 11.00 = -\text{€ } 0.59 \text{ (Price increase)}$$

In the example, purchasing negotiated a price going beyond the rate of inflation effect. The price difference results in a price improvement of 5.6% at the supplier. The producer price indices by the German Federal Bureau of Statistics (*Statistisches Bundesamt*) may be used as an additional reference value. However, if purchasing is able to keep the above indicated old price for another period of the framework agreement, this is to be recorded as purchasing performance even if it is, in this case, without any impact on the profit and loss account. It can be concluded that in 2008, a purchasing performance could be shown according to the rate of inflation of 2.6%; in 2009 of 0.4%, and in 2010 of 1.1%.

Volume-Adjusted Performance Measurement Finally, volume changes are to be taken into account and adjusted for determining the savings performance.³⁵ Volume effects due to customer developments should be separated from the buyer's performance. If a volume increase is exclusively due to a higher output volume or to the general business development, this will be outside the buyer's sphere of influence. The savings effect caused by a change in procurement costs is to be calculated on the basis of unchanged requirement volumes. If only the total costs of two periods were compared, a savings effect would result already with a reduction of the sales volume, even with unchanged procurement costs. Accordingly, any purchasing performance is to be adjusted by the actually procured quantity. Consumption volumes in the corresponding degrees of implementation or "hardness degrees" are here to be adjusted per business period. If the original estimated savings are based on prior year volumes, there is a high probability that the values come about. This prediction is recorded as

³⁴ Cf. Rounsavill et al. (2008).

³⁵ Cf. Wildemann (1999), p. 54 et seq.; cf. Buchholz (2002), p. 363 et seq.; cf. Ashenbaum (2006), p. 3 et seq.; cf. Jahns et al. (2007), p. 74 et seq.; cf. Rounsavill et al. (2008); cf. Johnson and Leenders (2010), p. 25 et seq.; Hug (2011); cf. Hug and Weber (2011), p. 42 et seq.

Table 2.3 Sample calculation for volume-adjusted performance measurement

	Period 0	Period 1
Price	10 €	8 €
Volume	30	40
Total costs	300 €	320 €
Savings effect	$(€ 8 - € 10) \times 40 = -€ 80$	
Purchasing performance	$(€ 8 € - € 10) \times 30 = -€ 60$	

a comparison variable and compared in hardness degree 5 with the volumes called in the quarter.³⁶

Although savings from volume changes cannot be directly allocated to purchasing, the effect should be shown nonetheless. Savings due to the purchasing performance amount to 60 € in the following example, based on the original volume of 30 units. Yet, due to a demand increase, 40 units were bought and total costs thus increased by 20 €. The resulting savings are actually reflected in the profit and loss account; however, they are qualified due to the higher expenditures for 10 additional units so that only the total price of 320 € can be shown and the volume effect might possibly go unnoticed (Table 2.3).

Example:

Basically, volume changes may result which are not market-related but were caused by a specific savings initiative. In this case, results can be shown as savings performance of the procurement organization. Examples for it are as follows:

- *Process-related volume change:* If the energy consumption of a plant is reduced, it will be reduced detached from the production volume, which is measurable as savings performance irrespective of whether this is attributable to purchasing or production.
- *Behavior-related volume change:* The installation of a network printer demonstrably results in a reduction of printing volume versus the use of printers at the workplace. Likewise, making individual mobile phone costs transparent will result in an immediate behavioral change of employees, accompanied by performance-relevant cost savings.

For the determination of savings, comparable specifications and requirements are normally assumed. For the object of a continuous improvement of the cost level and the promotion of innovative cost reduction approaches, it is recommended to explicitly take cost savings into account which result from changed material specifications (e.g., reduction of a film gauge) or from a changed consumption behavior (e.g., network printer instead of local printers). It can generally be stated that the application of a classical savings calculation based on the period-to-period comparison method is sensible and plausible for many financial executives. However, this item presents only a small section of purchasing performance. This once again underlines the requirement that the presentation of performance in individual com-

³⁶ Cf. Carter et al. (2005), p. 27.

modity groups is to record both the monetary and the non-monetary performance of purchasing.

2.3 Ratios for Performance Measurement on the Level of Commodity Groups

Ratios play a major role for presenting, in a condensed form, the information gained within the scope of performance measurement on the level of commodity groups. As presented in the following, ratios include aggregate savings, the framework agreement rate and the maverick buying rate.

One of the most important ratios in purchasing includes aggregate savings since they present the amount of savings and thus reflect the performance by the purchasing department in relation to its efficiency. Savings on the level of items consist of the difference between the reference price and the actually paid price in relation to the reference price. Reference prices may be different values, such as the historical price of the prior period, the average price of an offered selection, target costs, market price index, or the budgeted price.³⁷ It is to be noted here for which reasons the price had changed—whether an increasing inflation rate was the reason for a price increase or whether a change in procurement terms had been made.³⁸ Aggregate savings are subsequently calculated as weighted means of savings on the level of items.

$$\text{Aggregated savings [\%]} = \frac{\sum_{i=1}^n \text{Purchase volume}_{item} \times \text{Savings}_{item}}{\text{Total purchase volume}} \quad (2.9)$$

where n Item

Many companies accordingly exclude from the aggregate calculation of total savings any non-recurrent demands which in many cases includes e.g., the procurement of capital goods—because there are either varying or no reference values exist due to the lack of orders in prior periods. However, a top ratio in savings is of major importance especially for management to obtain an overview of the activities of purchasing and the savings resulting therefrom. For that reason, as many commodity groups as possible are to be included in the total aggregate calculation. Any commodity groups which due to their nature or condition cannot be taken into account therein should be separately listed and shown. Table 2.4 exemplarily presents the calculation of aggregate savings on the basis of the mean value of individual items weighted via the purchasing volume.

³⁷ Cf. Entchelmeier (2008), p. 78.

³⁸ Cf. Burt et al. (2003), p. 407.

Table 2.4 Sample calculation for the determination of aggregate savings

	Purchase volume (€)	Savings
Commodity group A	132,000	5.3 %
Item A1	45,000	4.2 %
Item A2	87,000	5.9 %
Commodity group B	58,000	2.1 %
Item B1	22,000	2.6 %
Item B2	36,000	1.8 %
Commodity group C	87,000	5.9 %
Item C1	78,000	6.1 %
Item C2	9,000	3.9 %
Total	277,000	4.8 %

The *framework agreement rate* results from the framework agreement volume in proportion to the total purchase volume and provides information about the percentage utilization of framework agreements in the procurement organization.³⁹ The framework agreement volume is generally to be taken from IT systems or, respectively, from databases for procurement since there are frequently purchases via electronic catalogs. Framework agreements generally include the contractual conditions and regulations which can be applied for any transaction and thus provide a basis for simplified and standardized handling of suppliers.⁴⁰ Since no changes can be made to the contract for the duration of the framework agreement, this model provides a certain amount of security for the contracting partners especially if prices are fixed or locked in.⁴¹ Across industrial sectors, the value is at 49% and varies in the different industries between 38% and 65% (Fig. 2.6).

$$\text{Framework agreement rate [\%]} = \frac{\text{Framework agreement volume}}{\text{Purchase volume}} \quad (2.10)$$

In a broader sense, maverick buying—frequently also called “wild purchasing” in the literature—means purchasing without including the procurement organization. In that case, purchases are made possibly disregarding actual needs and by persons actually not authorized.⁴² This will happen especially in companies with decentralized procurement organizations.⁴³

$$\text{Maverick buying rate (broader sense) [\%]} = \frac{\text{Purchase volume without incl. of purchasing organization}}{\text{Total purchase volume}} \quad (2.11)$$

³⁹ Cf. Preissler (2008), p. 171.

⁴⁰ Cf. Leenders et al. (2006), p. 314.

⁴¹ Cf. Schulte (2001), p. 215.

⁴² Cf. Leenders et al. (2006), p. 310.

⁴³ Cf. Karjalainen et al. (2008), p. 246.

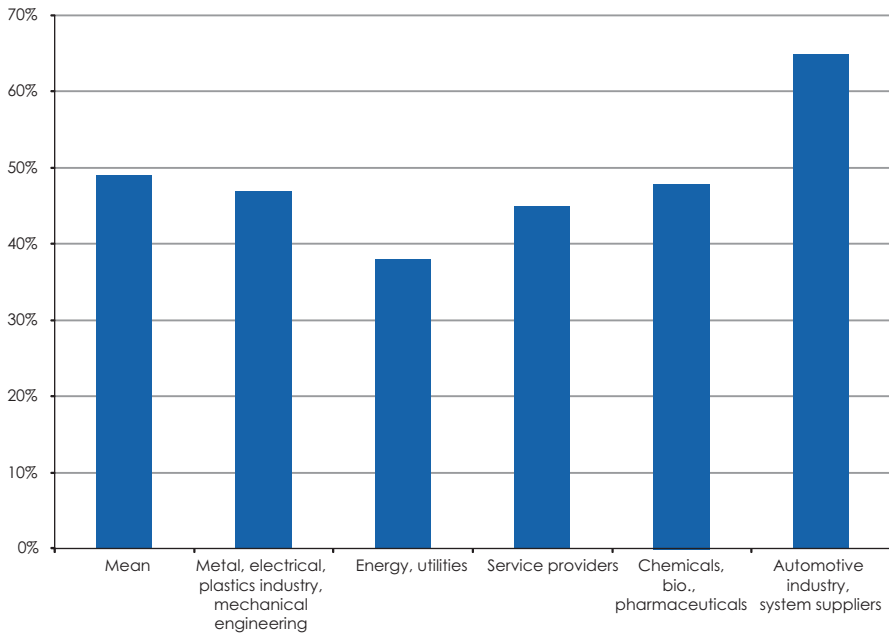


Fig. 2.6 Framework agreement rate in a comparison by industries. (Cf. BME 2010, p. 26)

In a narrower sense, maverick buying is the unused framework agreement volume in relation to the theoretically possible framework agreement volume. Due to framework agreements, the procurement organization has particularly advantageous conditions which are undermined by maverick buying. “Wild purchasing” will prove to be relatively cost-intensive—especially if follow-up costs, such as maintenance costs, are not included or if procurement is made by fragmented individual purchases so that volumes specified in the framework agreement can no longer be realized.

$$\begin{aligned}
 & \textit{Maverick buying rate (narrower sense) [\%]} \\
 & = \frac{\textit{Unused volume of framework agreement}}{\textit{Theoretically possible vol. of framework agreement}} \quad (2.12)
 \end{aligned}$$

According to various literature references, procurement costs by maverick buying in the broader sense will increase on average by 15 to 20%.⁴⁴ Figure 2.7 shows the maverick buying ratio based on a classification according to purchasing performance. The maverick buying ratio may be greatly reduced with the introduction of so-called “purchasing cards” which also authorize the staff from other departments to procure specific quotas of e.g., office materials or operating and auxiliary materials from a preselected number of suppliers.⁴⁵

⁴⁴ Cf. Wannewetsch (2005); cf. p. 17, Karjalainen et al. (2008), p. 251.

⁴⁵ Cf. Werner (2010), p. 36.

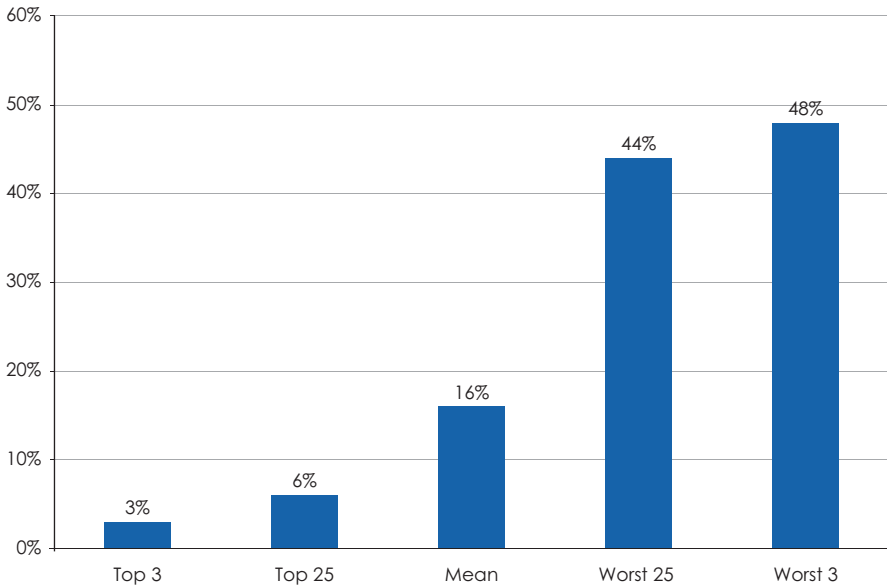


Fig. 2.7 Maverick buying ratio in percent based on a classification according to purchasing performance. (Cf. Arthur D. Little/Lehrstuhl für Logistikmanagement der Universität St. Gallen/Bundesverband Materialwirtschaft Einkauf und Logistik e. V. BME 2010, p. 4 et seq.)

2.4 Management Recommendations

Any one-sided or unilateral presentation of P&L-based savings will generally not be sufficient to fully reflect the reality of the purchasing performance. For decision-makers, this should be considered an incentive or motive to allow additional factors for the adequate control and evaluation of purchasing. In particular, qualitative features should be taken into account which do not present any immediate monetary performance. Moreover, a binding definition of the savings and performance calculation should be established for all commodity groups to ensure the equal treatment of all employees of a company. The evaluation and adjustment of volume, currency, inflation and market effects is indispensable and today belongs to the best practices of measuring savings and purchasing performance. Another step in the development is that the “hardness degree” method or the degree of implementation method is anchored in the company; the method reports negotiation results, forecasts as well as implementation results in purchasing and illustrates the progress of implemented measures. Moreover, the focus is to be extended towards reaching qualitative objectives and savings, such as process optimizations. Indirectly, financial savings can also be generated with it. For corporate management, the definition of purchasing performance going beyond P&L savings will provide a good opportunity for adopting new ways in performance measurement and expanding the spectrum of control

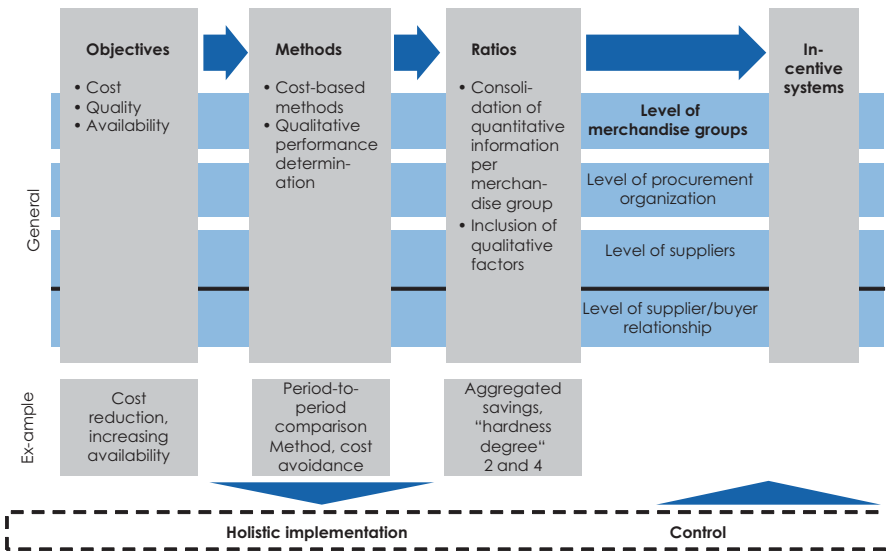


Fig. 2.8 Conceptual frame of reference for performance measurement on the level of commodity groups

measures. The following measures are proposed for a successful implementation on the commodity group level:

- Definition of a method and guideline for measuring savings in purchasing.
- Building up interdivisional governance structures for the sustainable control of saving measures.
- Acceptance of a differentiated presentation of the purchasing performance which will be differentiated by monetary and non-monetary savings, as well as according to their impact on the profit and loss account and their lack of impact in this respect.
- Additional presentation of price increases and cost avoidance.
- Implementation of the “hardness degree” method, as well as the differentiated consideration of savings according to the progress of impact.
- Regular review of performance measurement by a controller or an internal auditor.
- Ensuring corresponding system support, such as e.g., Spend Management Cost Breakdown or recording savings in an ERP system.

Figure 2.8 shows which objectives, methods and ratios take effect on the level of commodity groups.

Objectives on the level of commodity groups primarily refer to costs but also to quality as well as availability. Thus measures are taken to reduce costs or reach a higher quality level. Ensuring and increasing the availability of resources is also of relevance so that corporate functions can be maintained. For performance measurement on a commodity group level, both cost-based and quality-oriented methods should be used. Cost-based methods include the period-to-period comparison which compares current and historical prices to show savings. Qualitative

methods include, for example, cost avoidance which shows reductions of potential future costs. The consolidation of quantitative and qualitative information for each commodity group is manifest in various ratios. This includes aggregate savings. The “hardness degree” method or the degree of implementation method should also be taken into account here since this may illustrate the progress of realization of the measures.



<http://www.springer.com/978-3-642-38438-7>

Performance Measurement and Incentive Systems in
Purchasing

More Than Just Savings

Hofmann, E.; Maucher, D.; Kotula, M.; Kreienbrink, O.

2014, XIX, 182 p. 67 illus., Hardcover

ISBN: 978-3-642-38438-7