This sample chapter explores some of the standard reports and reporting options in SAP ERP that controllers will use every day, with a focus on reports that allow you to search for the relevant line items in each application area.
In this chapter, we’ll discuss the basic reports that every organization needs to run its core business, including coverage of general Controlling, Product Cost Controlling, and Profitability Analysis reports.

2 Reporting

Almost all SAP documentation and training materials cover reporting in the final chapter as something of an afterthought, once the main topics surrounding the business processes and underlying master data have been explained. However, if you’re a controller, the need to analyze business performance each month is at the heart of your job, the very reason for doing controlling in the first place, so it makes sense to start by looking at some of the standard reports that controllers use every day. This way, you’ll get a sense of what information is available in each area of the Controlling component of SAP ERP Financials (CO) and what you can expect from the chapters to follow.

The other reason to start with reporting is that it means we’ll have covered the basic functions, such as changing the column structure or downloading the report contents to a spreadsheet, when we walk through how to post expenses to a cost center or production order later.

In this chapter, we’ll focus on the line item that records expense postings, allocations, and so on, looking at reports that allow you to search for the relevant line items in each application area. Controllers also like to bring these line items into context to understand whether cost center spending is going according to plan, whether project spending is about to exceed a budget limit, or whether production lines are executing to target. While we’re looking at the line items for each area, we’ll try to bring these line items into their Controlling context.

This chapter will look at your reporting options in SAP ERP. If your organization is already using a data warehouse for reporting, you’ll find a discussion on when to use SAP Business Warehouse (BW) in Chapter 8. However, even controllers whose organizations have implemented SAP BW still tend to use the line item reports in SAP ERP for detailed cost tracking and analysis. In the final chapter,
we’ll look at the newer options available with SAP HANA. Because these build directly on the line items, it’s more important than ever to understand what information is being captured at source.

Note
Wherever possible in this book, we’ll use the new-look user interfaces that are available from EHPs 5 and 6 for SAP ERP 6.0. For readers not yet using this version of the software, we’ll also provide the menu path and transaction to make sure you can follow the instructions no matter which version of SAP ERP you’re running. You’ll find information about how to install the SAP NetWeaver Business Client in SAP Note 1029940 and how to implement the new user interfaces in Appendix A, which you can download at www.sap-press.com/3625.

2.1 Cost Center Line Items

Let’s start our journey in Cost Center Accounting. The cost center line item report that helps you monitor expense postings to a cost center and allocations from the cost center is one of the most widely used transactions in SAP ERP Financials. If you know how to use it properly, you’ll already be well on the way to being an expert in CO with SAP ERP Financials.

2.1.1 Classic Cost Center Line Item Report

In the SAP Easy Access menu, all transactions and reports are grouped into folders for the main application areas, such as Cost Center Accounting, Internal Orders, Product Cost Controlling, Profitability Analysis, and so on. These application areas are delivered as roles in EHP 5 for SAP ERP 6.0. When you log on, you’ll see all the roles assigned to your user. We’ll start each section by looking at the relevant role structure. Figure 2.1 shows the entries in the role Cost Center Accounting. You’ll find all the reports available for this role under Information System.

Before we explore the reports on offer, let’s look at the Home page shown in Figure 2.2. This page is delivered as part of the Cost Center Accounting role (SAP_EP_RW_CO_KSMN) if you’re on EHP 6 for SAP ERP 6.0. As a controller, it can be good to start the day with a quick overview of the plan/actual costs on your cost centers before you delve into the details. To make sure that this report can run without you entering any selection parameters, you need to set certain defaults for your user. To do this, select System → User Profile → Own Data, choose the Parameters tab, and enter the parameter CAC for the controlling area. You’ll notice an area called My Default Settings in the lower left of the screen. As you enter a cost center and/or cost center group, you’ll be updating your user parameters with the parameter KOS for the cost center and your chosen cost center.
The **Information System** link in Figure 2.1 will take you to a screen that shows the reports available for **Cost Center Accounting**. This is the equivalent of choosing the menu path **Financials > Controlling > Cost Center Accounting > Information System > Reports for Cost Center Accounting** in earlier versions of the software. If you compare the links in Figure 2.3 with the entries in the classic menu, you’ll find that more reports are shown here. This is because we’ve included newer reports in the list that were delivered in EHPs 3 and 5 for SAP ERP 6.0. All reports with the word **List** in the title can be run directly in your SAP ERP environment.

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**Activating New Reports via the Enhancement Packages**

To find out how to make the new reports work in your organization, refer to Appendix B, which you can download at www.sap-press.com/3625.

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In the **Line Items** folder, select the link **Cost Centers: Actual Line Items**. The **actual line items** document every posting taking place to CO (such as the expense posting we looked at in Chapter 1) and in CO (such as the allocations we’ll look at in Chapter 7).

The selection screen for the cost center line item report now appears (see Figure 2.4). Experienced controllers will recognize this as Transaction KSB1. From this point onward, all functions will be the same as in the classic transaction. The new user interface simply changes the way the transaction is accessed, replacing a menu or transaction call with a role-based approach.
This type of list report is available throughout CO and in other areas of SAP ERP, so it’s worth taking time to get familiar with the standard report functions. You’ll recognize reports built with this technology throughout the book by the standard toolbar. The technical term for this kind of report is SAP List Viewer. To explore this type of result list, some controllers immediately reach for the Export to Excel button and start exploring their data in a spreadsheet.

You should know, however, that SAP List Viewer has its own spreadsheet-like functions. You can sort columns, include totals and subtotals, and so on in any list. To remove unnecessary columns, position the cursor on the column, right-click, and select Hide.

In general, you are more likely to add fields to such reports than remove them, because the line item includes far more fields than can reasonably be displayed on a single screen. The group of fields displayed in SAP List Viewer at any point is called the layout. SAP delivers several layouts for use with cost centers. You can change these with the Change Layout dialog, which you can reach by clicking on the Choose Layout button; the Choose Layout screen is shown in Figure 2.6.

The cost center line item includes layouts for the following:

- **Primary cost posting**
  Use this layout to analyze expense postings from the general ledger.

- **Secondary costs: Activity allocation**
  Use this layout to analyze direct activity allocations charged from another cost center (see Chapter 6).

- **Secondary costs: Value settlement**
  Use this layout to analyze order values that have been settled to the cost center (see Chapter 7).

- **Purchase order**
  Use this layout to analyze purchase orders whose account assignment is the cost center (see Chapter 6).

- **Material movement**
  Use this layout to analyze goods movements charged to the cost center (see Chapter 6).
These layouts will get you started, but you’ll almost certainly want to create more layouts to organize the data in the list the way you want to see it (you’ll notice that additional layouts have also been created in this demo system). To change a layout or to create a new one, click on the Change Layout button, which takes you to the Change Layout dialog shown in Figure 2.7.

To add fields, move them to the left by marking the relevant field in the right-hand column (Column Set) and selecting the left-facing arrow button in the center. To hide columns, move them to the right by marking the relevant fields in the left-hand column (Displayed Columns) and selecting the right-facing arrow button in the center. If the result is a layout that you want to use regularly, it’s worth saving the layout under a meaningful name by clicking on the Save button. The new layout is assigned to your user, so nobody else will see your layout. To help you explore the potential of this list, let’s consider the data available in the line item report.

Primary Cost Postings

The layout shown in Figure 2.6 and Figure 2.7 is for primary cost postings. It explains expense postings that originated in the General Ledger and shows the cost element in CO that mirrors the profit and loss account in the General Ledger and the offsetting reconciliation account for the vendor in Accounts Payable. We’ll look at cost elements and accounts in more detail in Chapter 3 and Chapter 4. The layout also includes details of the offsetting account type—the insurance company whose services have been purchased—so the layout includes account type K for vendors and the offset account for the vendor invoice in our example.

If you want to reconcile your cost center documents against the data in the General Ledger, you can extend this layout to include the following fields, all of which are defaulted from the cost center master record:

- **Company Code**
  If you’re looking at cross-company postings, you may want to know in which company code each posting was made.

- **Business Area**
  This is the main way of segmenting your business activities in the general ledger.

- **Functional Area**
  This is used to segment activities for cost-of-goods-sold (COGS) reporting and in Public Sector Accounting.

- **Segment**
  This is used for segment reporting according to International Financial Reporting Standards (IFRS). The segment is derived from the profit center in the cost center.

One field you won’t find in the layout is the controlling area. Every posting in CO takes place in a controlling area. Depending on your configuration, the controlling area may cover one or more company codes. In recent years, there has been a trend in global organizations toward a global controlling area. Whatever your settings, the golden rule is that all postings in CO and all reporting activities take place in a single controlling area. The only way to show data in multiple controlling areas is to report in SAP BW.
**Secondary Postings or Allocations**

If we assume that the cost center allocates the insurance expenses to several other cost centers, you might want to explain these postings by creating a new layout to show the partners participating in the allocation. This layout still includes the cost element and the cost center as the sender of the allocation, but you can extend it to include the following fields for the sender:

- **Object Type**
  The type of object against which the posting was made. In our example, the cost center is CTR. For the order line item that we’ll look at later, the object type is ORD, and so on.

- **Object**
  The object against which the posting was made. In our example, this is cost center number 1230.

- **Debit/Credit Indicator**
  Whether the posting was a debit (D) or a credit (C).

To explain the other side of the partner relationship, include the following fields:

- **Partner Type**
  The type of object to which you made the allocation. This might be CTR if you are using assessment cycles or distribution cycles or ORD (order) if you are charging a department’s costs to an order using time recording.

- **Partner Object**
  The key of the other cost center or the order that received the allocation.

- **Partner Object Name**
  The name of the other cost center or the order that received the allocation.

- **Business Transaction**
  This enables us to distinguish between different types of postings and allocations for auditing purposes. We’ll see examples of the different codes for the business transactions when we look at sample expense postings in Chapter 6 and the various forms of allocations that take place at period close in Chapter 7.

**Multiple Currencies**

If you work with several currencies, it’s also a good idea to create a separate version of your chosen layouts for each of the relevant currencies and another layout that shows relevant combinations:

- **CO Area Currency**
  This is usually the group reporting currency and is set for the controlling area. Generally this is the same as the group currency in the General Ledger.

- **Object Currency**
  This is the currency of the object (in our case, the cost center) and is set in the cost center master record. For example, a cost center based in the United States would have US dollars as the object currency. Generally this is the same as the company code currency in the General Ledger.

- **Transaction Currency**
  This is the local currency in which the transaction was performed. For example, if the US cost center purchases goods in Canada, the Canadian supplier would invoice in Canadian dollars (transaction currency).

- **Report Currency**
  This is set centrally for reporting purposes.

The other fields in the line item report are of two types. Some are specific to the business process (such as supplier, material or employee) and make sense in that context but will not be filled by other transactions. Others are fairly technical and tend to be used for troubleshooting or when extracting data to another system, such as SAP BW.

### 2.1.2 Simplified Cost Center Line Item Report

In EHP 3 for SAP ERP 6.0, SAP modernized the user interface for the cost center line item report so that the whole user interface is on the Web. From EHP 5 for SAP ERP 6.0, you’ll find the new reports in the list we showed in Figure 2.3. In earlier enhancement packages, you’ll find them in a separate list that you’ll have to copy into your existing roles. All reports labeled List behave exactly the same way as the cost center line item report. There are also reports labeled Analysis and Crystal Report. We’ll come back to these reports when we look at alternative reporting options using SAP BW (for the analysis reports) and SAP BusinessObjects (for Crystal Reports) in Chapter 8.

Clicking on **Cost Centers: Actual Line Item (List)** takes you to the new report. Enter the same search criteria as before. Figure 2.8 shows the resulting layout. Without getting too technical, notice that the screen rendering of an application built specifically for the Web looks “cleaner” than a transaction that was built in pre-Web days and has simply been called via the role. However, the costs
displayed are identical, because both reports read the same underlying data from SAP ERP. You might also consider making this report available to cost center managers and keeping the classic line item report for use in Controlling.

This report looks slightly different, in that the selection screen can be toggled on and off with the Search Criteria button rather than being left behind once the report is executed. The basic principles for list reporting that we just discussed are the same. To create layouts and change the fields displayed, click on the Settings button. Beware, however, that this time the hidden columns are on the left and the displayed columns on the right (see Figure 2.8).

Figure 2.8  Simplified Cost Center Line Item Report

Simplified Reporting and the SAP Easy Access Menu

Although the first enhancements for Simplified Reporting were introduced in EHP 3 for SAP ERP 6.0, activating the business function FIN_REP_SIMPL_1 does not activate new transaction codes or bring these reports into your SAP Easy Access menu. The way to work with the list reports delivered for Simplified Reporting is to make them part of a report launchpad that is included in the user’s role. To find out how to configure a report launchpad like the one shown in Figure 2.3, refer to Appendix B (found at www.sap-press.com/3625).

2.1.3 Totals Records for Cost Centers

The line item is by far the most commonly used data record for reporting. Similar data records exist to document what happened during the planning process (Transaction KSBP) and how commitments are created and used (Transaction KSB2). However, to put the entries in the line items into context, most controllers will want to look at how the costs compare with their plan. The plan data is generally at a higher level of aggregation than the line item (it’s rare to plan by supplier, employee, and so on). Every line item has its sister totals record that stores a subset of the data available in the line item. Most of the period-close reports that we will look at in Chapter 7 read the totals records rather than the line items, because performance is better if you select from a handful of fields organized in period blocks rather than from all eighty fields in the line item table. You’ll find that most of the other reports in Cost Center Accounting, including the plan/actual comparison, target/actual comparison, and so on (see Figure 2.3), also work with totals records. In essence, the reports are bringing the detailed line item data up to the level at which you planned (cost center/account/period) so that you can make a line-by-line comparison. We’ll look at planning in more detail in Chapter 5.

In general, you can display the line items from these reports by selecting the line you’re interested in and double-clicking. The selection parameters (cost center, cost element, time frame, and so on) are passed to the line item report through the Report to Report Interface. As an example, select PLAN/ACTUAL COMPARISON Report (in Figure 2.3) and enter the cost center 1230 and the periods January to December 2013 in the selection list. The result is a formatted report (see Figure 2.9) designed to show the cost center manager the state of spending on his cost center in that time frame. To display the line item, double-click on the line for insurance expenses, and select Cost Center: Actual Line Items from the pop-up.

This passes the parameters from your selection, and you then see the line item report we used as our initial example.

It’s unlikely that you’ll work with cost centers alone, so let’s now look at the reports for internal orders.
2.2 Order Line Items

Let’s continue our journey by looking at internal orders. Orders have many uses in SAP ERP, either detailing the activities on a cost center or representing activities going on completely separate from the cost center, such as capital investments. Others are purely statistical and are entered as an additional account assignment alongside the real cost center or order. There are also many orders that don’t originate in CO but are created in Logistics (production orders, process orders, maintenance orders, QM orders, networks, and so on).

The costs for these orders can be analyzed using the same report, which probably explains why the order line item report is one of the most widely used transactions in SAP ERP Financials.

Order line item reports follow the same basic principles as cost center line item reports. In Figure 2.10, we’ve selected the role INTERNAL ORDERS (SAP_EP_RW_CO_KAMN). You’ll find all the reports available for this role under INFORMATION SYSTEM. This corresponds to the menu path FINANCIALS → CONTROLLING → INTERNAL ORDERS → INFORMATION SYSTEM → REPORTS FOR INTERNAL ORDERS in earlier versions of the software.

Again let’s take a look at the Home page (see Figure 2.11) before looking at the reports in detail. This time, consider setting defaults for the order type AAT and the order number ANR to ensure that the report can start with a default setting.

Figure 2.12 shows the list of reports for the internal orders. Again this includes classic reports in all releases of SAP ERP and further reports that can be activated through the Simplified Reporting business functions.
Now select the Line Items folder and then Orders: Actual Line Items. Experienced controllers will recognize this as Transaction KOB1. To select the relevant line items for analysis, enter order 400199, leave the cost element group blank, and enter posting dates between 01.01.2013 and 31.12.2013 in the selection screen. Then click on the Execute button. The result is a list of all postings for order 400199 in 2013, as shown in Figure 2.13.

The same layouts are available as for the cost center line item report except that this time the account assignment is the internal order. Additional line item reports document what happened during order planning (Transaction KABP) and how commitments are created and used (Transaction KAB2).

User-Specific Layouts

Once order managers have understood how to create their own layouts, you are likely to find that layouts for this transaction proliferate. These same managers will tend to set...
their own layouts as default for all users. Encourage users to set the User-specific flag when they save their layouts, especially if they are creating a default. If you need to clean up your layouts at any point, choose Settings • Layout • Manage. You can then toggle between your personal layouts and those belonging to your organization, checking them and if necessary deleting ones that are no longer needed.

When it comes to putting order spending in context, you can, of course, compare planned costs against actual costs just as we did for the cost center, but it’s also possible to set a budget for internal orders—in other words, a ceiling on spending for that order. You won’t use this for all order types, but it’s common to set budgets for investment orders and some maintenance orders. As an example, select List: Budget/Actual/Commitments (in Figure 2.12) and enter the controlling area and a range of internal orders (we’ve used a range of marketing orders) in the selection list. The result is a formatted report (see Figure 2.14) designed to show the order manager the state of spending by comparison with the budget. We’ll come back to planning and budgeting in Chapter 5, and explain how this ceiling is used to block spending on the order and how the Commitment column gets filled in Chapter 6.

![Figure 2.14 Budget/Actual Report for Marketing Orders](image)

Although cost centers and internal orders are the simplest account assignments, if you work for a manufacturing company you’ll also want to understand how to report on product costs, which we cover in the next section.

### 2.3 Product Costs: Itemization

The concept of cost center line items and order line items is easy for most accountants to grasp because of the affinity between a line item and a document in the General Ledger. When we come to product costing, the data structures change as the document takes something of a back seat and the focus moves to multilevel production structures, a familiar view for engineers but a new world for some accountants.

The standard costs for each manufactured product are calculated using a product cost estimate. The first step in costing is to read the bill of material (BOM) in Logistics to determine the materials to be used. The BOM is a multilevel structure that describes which raw materials are used to make a quantity of semifinished product and which semifinished products are used to make a quantity of finished product. The costs of converting the raw materials into semifinished products and then into finished products is described in routings. This focus on the production master data is also apparent in the reports, with the multilevel costed BOM being by far the most commonly used report, followed by the itemization that displays a line for each input to the production process (in other words, for each material and each internal activity from the routing).

If the product can be manufactured on different production lines or manufactured in-house and purchased, then you’ll find each approach represented in the reports as a procurement alternative. If such alternatives have been defined for a product, the system creates a cost estimate for each alternative and then mixes them according to a percentage (such as 60% make, 40% buy). Depending on the implementation, you may also see items for purchasing info records, subcontracting, external activities, co-products, planned scrap, and so on in the product cost reports.

Every costing item is automatically assigned to a cost element that represents the account under which actual goods movements are posted. The cost elements are then assigned to cost components that represent the major cost blocks in production. There are several ways of looking at product costs:

- **Cost of goods manufactured**
  
  This method sees the product costs as material costs, internal activities, external activities, overhead, and so on. There can be up to 40 cost components, and
the assignment is based on the cost elements under which the actual postings are captured in the system.

- **Primary cost component split**
  This split looks at what is behind the internal activity. In other words, to provide an internal activity, a cost center uses energy, wages, depreciation, and so on.

- **Partner cost component split**
  This split looks at the value added by each plant, company code, or business area involved in the manufacturing process.

### Classic Reports for Product Cost Reporting

We’ll start as we did for the cost centers and internal orders, with the role for **PRODUCT COST PLANNING (SAP_EP_RW_CO_CK00)**.

To access the relevant reports, select **INFORMATION SYSTEM** from Figure 2.15. Figure 2.16 shows a list of reports for product cost planning. In earlier versions of the software, follow the menu path **CONTROLLING** \> **PRODUCT COST CONTROLLING** \> **PRODUCT COST PLANNING** \> **INFORMATION SYSTEM** \> **REPORTS FOR PRODUCT COST PLANNING**. You may find that these reports are not just used by controllers but also by the engineers responsible for designing new products and the supply chain people responsible for cost assignment on the production line.

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**Figure 2.15** Product Cost Planning within SAP NetWeaver Business Client

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Let’s start with the **DETAIL REPORTS** folder and select **COSTED MULTILEVEL BOM** (see Figure 2.16). Enter the following and execute the report:

- **Material number and plant**
  This identifies the product you’re interested in.

- **Costing variant**
  This provides the link to the configuration settings, telling you the purpose of the cost estimate (setting standard costs, determining the accuracy of current standard costs, balance sheet valuation for annual close, etc.), how the bill of material and routing should be selected, and what prices will be used in this calculation.

- **Costing version**
  Normally, this is 1, unless you’re using mixed costing (for which multiple cost estimates are weighted) or group costing (for which the same BOM and routing are costed first using the local prices and again using the group costs).

- **Costing lot size**
  The reference quantity for the cost estimate against which all variable costs will be adjusted.
Figure 2.17 shows the BOM together with the cost per item. You’ll see the same report integrated in the cost estimate itself when we calculate the standard costs in Chapter 5.

Notice that some of the icons in this report are familiar from the cost center line item report. This is because this report also uses SAP List Viewer, but it uses a tree structure to represent the quantity structure in production, with each level in the tree representing an assembly with its own bill of material.

To display the costs per operation in the routing, select the Itemization report in the Detailed Reports folder. Because of the sheer number of ways of looking at data for a cost estimate (by item category, by operation, by cost element, by cost component, and so on), SAP delivers many layouts. To view the operations in the routing, select the Operations layout before executing the report.

Figure 2.18 shows the items by operation, together with the delivered layouts:

- **Item Categories**
  - Groups the items of the cost estimate by the internal categories Material, Internal Activity, Overhead, and so on.
- **Costing Items**
  - Lists the items of the cost estimate by their technical IDs.
- **Cost Components**
  - Shows the assignment of each costing item to one of up to 40 cost components.
- **Assemblies/Raw Materials**
  - Shows the raw materials (materials without BOMs, i.e., purchased materials) and assemblies (materials with their own BOMS, i.e., manufactured materials) used in the final product.
- **Cost Components/Cost Elements**
  - Used to check the assignment of the items to cost elements and from there to cost components.
- **Operations**
  - Shows the assignment of the costing items to the operations in the routing.
- **Co-Products**
  - In the case that multiple products are manufactured in a single process (joint production), each co-product is shown with item category A. We’ll discuss co-products in more detail in Chapter 4 and Chapter 6.
- **Planned Scrap**
  - Normal spoilage is planned in the BOM, routing, and material master for the assembly. We’ll discuss planned scrap in more detail in Chapter 4.
- **Cost Elements**
  - Shows the assignment of the costing items to the accounts/primary cost elements and the secondary cost elements.

The product cost reports we’ve looked at so far help us analyze the standard costs for the product and support us mainly during the planning process (see Chapter 5). We’ll now look at the reports available during the manufacturing process to explain how the costs are captured for production orders and similar objects. These are later compared against the standard costs during variance analysis.
2.4 Product Costs: Cost Objects

Product Cost Planning almost never exists in isolation but exists as a preparation for Cost Object Controlling, where the costs of executing the individual work orders are monitored. The reporting for Product Cost Planning introduced many new concepts, but the reporting for Cost Object Controlling is similar to the reports for the internal order. The data structures for the line items and totals records are identical. The main difference between an internal order and a production order is that the production order includes a planned lot size (the planned output measure for the order; see Chapter 1). Therefore, although an internal order for a research project simply collects the costs associated with the research, a production order collects costs for the manufacture of a given quantity of the finished product. This is important, because all planned costs for this quantity will be adjusted later to calculate the target costs for the actual quantity of goods produced. This in turn provides the basis for variance analysis—a line-by-line comparison of the target costs against the actual costs in which the differences are explained as quantity variances, price variances, resource-usage variances, and so on. We’ll look at the calculation of target costs and variances in more detail in Chapter 7.

Probably the biggest initial challenge is gaining an understanding of which cost objects your organization has chosen to work with, because a number of different approaches exist in Cost Object Controlling, depending on the nature of the chosen manufacturing process and your organization’s approach to management accounting.

2.4.1 Product Cost by Order

The product cost by order approach is used when the individual production order or process order is the focus for cost management and the production costs for each individual lot are regularly monitored. The idea of the work order as the key element is an approach that has been around since the 1930s. The business goal is to monitor how each order gradually accumulates costs as goods are issued to the shop floor, operations confirmed, scrap reported, and so on. This approach makes sense when setup costs are significant and full cost traceability for each order is a business requirement and is widely used. It’s also common where batch traceability is required in certain industries. However, practitioners of lean accounting argue that focusing on the work order in isolation encourages a "push" approach that potentially results in excessive inventory for which there is not necessarily a demand. Cost collection by order is also necessary in the case of joint production, in other words, cases in which multiple products are produced in the same manufacturing process and the order costs have to be split to the co-products. The Product Cost by Order menu offers a number of reports for tracking the costs of production campaigns, in which a series of production orders are manufactured in sequence because of the high costs of initial setup and cleanup on completion. This is particularly common in the chemical and pharmaceutical industries. More recently, developments for cost collection in outsourced manufacturing have brought the CO production order back into favor. We’ll explore this in Chapter 6.

In controlling terms, this approach is characterized by the delivery of the finished product to stock, the calculation of variances on completion of the order, and the calculation of work in process if the production or process order happens to be open at the time of the period close. We’ll look at this process in detail in Chapter 7.
Figure 2.19 shows the role for Order-Related Controlling (SAP_EP_RW_CO_KKSM).

To see the reports, select the Information System link. This is the equivalent of following the menu path Financials > Controlling > Product Cost Controlling > Cost Object Controlling > Product Cost by Order > Information System > Reports for Product Cost by Order.

Figure 2.20 shows all reports for product cost by order. Because of the number of production orders being processed at any given time, the detailed reports we looked at for the internal orders are supplemented by various mass reports that select, for example, all materials in a given plant or for a given product group.

Figure 2.21 shows the various production orders we created for the manufacture of material ACT-DCD in plant 6000 in February 2014 (you'll see how we created these postings in Chapter 6). To view this report, choose Reports for Product Cost by Order > Object List > Order Selection or Transaction S_ALR_87013127. From here, you can select an order and navigate to the detailed reports that show the actual costs in context.

In Figure 2.22, we've selected one of these production orders for detailed analysis. The target costs have been adjusted in line with the delivered quantity (five pieces). You'll immediately notice some significant variances. This is because we posted additional inventory to the order after an inventory count and additional activity costs to demonstrate the distribution of variances.

We'll look at the reports to aggregate production orders en masse when we look at mass reporting in Chapter 8. It's also common to move such orders to a data warehouse for reporting on account of the huge data volumes. Some organizations choose the Product Cost by Period option simply because they believe this is the only way they'll be able to handle the data volumes in question.
2.4.2 Product Cost by Period

At some sites, the volume of production orders is so high that it’s nearly impossible for CO to monitor the costs successfully. This can be the case in the food industry, in which the production orders can be very short lived (less than a day). It can also be the case with continuous, repetitive production with minimal setup that there is simply no requirement for individual lot-oriented controlling and that storing each production order as a separate order in CO represents an unnecessary burden for reporting and at period close. In this case, costs can be assigned to product cost collectors that represent each production alternative, and you might report on each production version, where the production version represents a production line or a set of manufacturing cells, rather than on the individual work orders. We’ll create a product cost collector for cost collection in Chapter 3. These provide a lean controlling by period, in which the goods movements and confirmations in Logistics are made by production or process order, but the costs are automatically routed to the product cost collector. The output measure is then not the lot size on the individual order but the sum of all delivered quantities in the period. Variance calculation and work-in-process calculation take place for each product cost collector at the end of the period. This approach is mostly used in a make-to-stock environment, but is occasionally found in simple make-to-order scenarios.

Lean Accounting

Lean accounting encourages organizations to move away from the collection of costs by work order and toward a value stream-based view of the organization. The product cost collector fits nicely into this concept, capturing the costs for each production version by period. If the value stream involves multiple products, then such costs can be rolled up to the value stream level in reporting, where the value stream is typically represented by a product group or material group.

Figure 2.23 shows the role for Product Cost by Period (SAP_EP_RW_CO_KKPM). To see the reports, select the Information System link. This is the equivalent of following the menu path Financials • Controlling • Product Cost Controlling • Cost Object Controlling • Product Cost by Period • Information System • Reports for Product Cost by Period (see Figure 2.24).
other words, have been started but not completed), which operation quantities are complete and can be analyzed for variances, and for which operations scrap has been confirmed. Although most of the reports are similar to those for product cost by order, you’ll also notice line items for a cost object. The cost object hierarchy is used to create a cost object for which the cost of internal activities can be captured when there is no routing or the routing does not capture all manufacturing activities. These costs can then be distributed to the assigned product cost collectors or production orders at period close. Alternatively, the costs on the production orders or product cost collectors can be summarized to the cost objects and then settled. We’ll look at how to create cost object hierarchies in Chapter 3.

2.4.3 Product Costs by Sales Order

The product cost by order and product cost by period approaches are mainly used in a make-to-stock environment. In this case, sales controlling takes place in Profitability Analysis, where the sales orders and associated invoices are captured. Product cost by sales order is used when the manufacturing process is linked to the sales order, generally because a customer-specific configuration has taken place in the order, as might happen in the automotive, steel, or high-tech industries. It can also be used in service scenarios where a customer service order is associated with the sales order rather than a production order. In this case, there can be no standard costs for the product because the product is unique to that sales order. In general, a cost estimate is created for each such item in the sales order, and this cost estimate may be used to price the sales order. To ensure that the finished product cannot be taken from stock and shipped to a different customer, delivery from the production line is made to sales order stock, and the delivery to the customer can only be made from this stock. Because there are no standard costs, the sales order cost estimate is also used to value goods movements to and from sales order stock.

Lean Accounting

Lean accounting encourages the use of make-to-order, where the sales order initiates, or “pulls,” the manufacturing process in its wake. This is the opposite of the classic work order approach, where work orders “push” their goods into inventory in the hope that sales will then be able to sell the product in stock.

Figure 2.25 shows the role for Sales Order Controlling (SAP_EP_RW_CD_KKAM). To view the reports, select Information System. Figure 2.26 shows the standard reports delivered for sales order reporting. You can find this by following the menu path Financials • Controlling • Product Cost Controlling • Cost Object Controlling • Product Cost by Sales Order • Information System • Reports for Product Cost by Sales Order.
The line items and total records are similar to those you would see for any order, but you also have reports for sales order costing that are more like those we discussed for Product Cost Planning in that the quantity structure (BOM and routing) is very prominent. It's also important to be able to select sales orders the way we did production orders, as shown in Figure 2.27. Be aware here that these aren’t all the sales order items in your organization, but only those that are make-to-order items.

Figure 2.26 Reports for Sales Order Reporting

The line items and total records are similar to those you would see for any order, but you also have reports for sales order costing that are more like those we discussed for Product Cost Planning in that the quantity structure (BOM and routing) is very prominent. It’s also important to be able to select sales orders the way we did production orders, as shown in Figure 2.27. Be aware here that these aren’t all the sales order items in your organization, but only those that are make-to-order items.

Figure 2.27 Sales Order Results List

If you don’t have a requirement to revalue material inventory at actual costs, you can skip the next section and go straight to Profitability Analysis. If you work in a country with a legal requirement to report according to actual costs or an industry in which actual costing prevails (such as chemicals), then the next section will introduce the Material Ledger as a tool for collecting actual costs.

2.5 Material Ledger

Not all sites use the Material Ledger. Your organization may use it if you have a legal requirement to value inventory at actual costs (common in Asia and South America), if you have highly volatile raw material prices or unstable production structures that make standard costing with detailed variance analysis impractical, or if you use it to provide a second inventory valuation approach for legal reporting.

From a reporting point of view, the Material Ledger differs from cost center and order reporting in that the reports display the inputs and outputs in each procurement, production, and sales process. The Material Ledger has its own documents for every goods movement, every business transaction that affects material prices (invoices, order settlement, etc.), and its own calculations at period close. Call up a report for a raw material, and you’ll see the goods receipt and invoice from the supplier in the Receipts line and the goods issue to production in the Consumption line along with details of any stock currently in inventory. Call up the same report for a finished material, and you’ll see the goods receipt from raw material inventory in the Receipts line and the goods issue to sales and the invoice to the final customer in the Consumption line. Chapter 6 will walk you through a complete manufacturing process from procurement to sales, showing you the Material Ledger postings for each goods movement.

Figure 2.28 shows the role for Actual Costing/Material Ledger (SAP_EP_RW_CO_CKML). To access the list shown in Figure 2.29, select Information System. You can find this by following the menu path Financials • Controlling • Product Cost Controlling • Material Ledger/Actual Costing • Information System. Two reports are used frequently: Material Price Analysis (Transaction CKM3N) and the Valuated Material Quantity Structure (Transaction CKMLQS). Note that the standard reports focus on the reporting of a single material. SAP recently introduced new drill-down reports for reporting on multiple materials. We’ll
show how to work with these in Chapter 13, because they were originally introduced in the context of SAP HANA.

Figure 2.28 Material Ledger in SAP NetWeaver Business Client

Figure 2.29 Reports for Material Ledger Reporting

Figure 2.30 shows the Material Ledger postings for a raw material that has been purchased from an external supplier and then issued to an internal production process for conversion into a finished product. Technically, this is a list viewer tree report like the one we saw for the multilevel costed BOM in Product Cost Planning.

Figure 2.31 shows the quantity structure for a finished product (PCG-FERT-01) that has required three semifinished products (PCG Barrel Head, PCG Construction Kit, and PCG Motor Housing) in its manufacture. Manufacturing activities were performed to convert the three semifinished products into PCG-FERT-01. This report first became available in Release 4.7 of SAP R/3 (see Appendix C at www.sap-press.com/3625).

![Material Price Analysis](image)

![Valuated Quantity Structure](image)
In addition to these two detailed reports for the material and the quantity structure, much reporting in the Material Ledger is performed in the context of the period close (see Chapter 7), in which each step in the periodic costing run (used to calculate the weighted average costs per material at the end of each period) and each step in the alternative valuation run (used to provide actual costs in a wider time frame or according to a second accounting approach) has its own supporting report that allows you to check the values calculated in that step.

The Material Ledger collects all costs from the first purchase of the raw material through all conversion steps to the final delivery of the finished product to the customer. We’ll walk through all the steps in this process when we look at actual postings in Chapter 6. However, as the name implies, the Material Ledger gathers costs by material. It keeps track of the cost of goods sold for these materials, but it does not capture revenue, and it provides no information about the customer who bought the finished product, the sales organization that performed the sale, and so on. For such information, we must move to Profitability Analysis (or CO-PA).

### 2.6 Profitability Analysis Reports

The Profitability Analysis reports differ from the other reports we’ve looked at so far in that there are virtually no standard reports, because the structure of the operating concern is determined during implementation. Figure 2.32 shows the Profitability Analysis role (SAP_EP_RW_CO_KEMN). Choose Information System to access the reports.

The only commonality in Profitability Analysis reports is that certain standard events write data into the Profitability Analysis application. In costing-based Profitability Analysis, these are distinguished by the record type. The following transactions transfer data to Profitability Analysis:

- Incoming sales orders (record type A)
- Direct postings from Financial Accounting (record type B)
- Order and project settlement (record type C)
- Cost center allocations (record type D)
- Single transaction costing (record type E)—industry specific, so you might not use it
- Billing documents from Sales and Distribution (record type F)
- Customer agreements (record type G)—used in some industries
- Statistical key figures (record type H)
- Transfer of sales orders from projects (record type I)—used for commercial projects that are linked with sales orders for billing

If this list sounds fairly technical, consider instead the different levels of detail captured for the main record types in Profitability Analysis:

- Let’s start with an incoming sales order (record type A). We’ll see in Chapter 6 that an incoming sales order includes the name of the customer, the product or products purchased, the sales organization making the sale, the distribution channel, the division, the sales office, the sales group, and so on. This is the lowest level of granularity available in Profitability Analysis.
- Usually, the same characteristics are captured when the customer is billed for his purchase (record type F). Again, this is extremely detailed information.
- A direct posting from Financial Accounting (record type B) may be made at this level of detail if the person making the posting has all the listed information. However, as we’ll see in Chapter 6, it may be possible to know only the affected material at the time of the posting and not the customer who will ultimately purchase the finished product. In this case, the record includes the product as a characteristic but not the customer.
- Production variances (carried in the settlement document—record type C) always apply to the product produced, but only apply to the customer if it’s a
make-to-order scenario and the production process is triggered by the sales order.

- **Cost center allocations** (record type D) offer the most options. In Chapter 7, we'll learn how to set up assessment cycles that can be very granular, breaking all expenses down to individual customers or products. We'll also see that it's possible to do an allocation to a much higher-level characteristic, such as a region or a country. This might be the case for marketing expenses (for example, if it's clear that a trade fair took place in the northwestern region of the United States but unclear which customers participated).

We'll look at some of these different record types, by selecting the line item report (Transaction KE24). Figure 2.33 shows the selection screen for the CO-PA line items. We've selected all documents created by this user in company code currency.

**Figure 2.33** CO-PA Line Items Selection Screen

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**Figure 2.34** Line Item Report Showing CO-PA Documents

The structure of the operating concern and with it of the CO-PA tables is the business of the implementation team. Figure 2.35 gives one approach to designing the relationships between the entities for profitability reporting.

**Figure 2.35** Organizational Structures in CO-PA
The implementation team determines all other fields when they configure your system. Because the focus is on sales reporting, most organizations have the dimensions product, customer, and sales region and other dimensions that can be derived from these entities (product group, customer group, division, sales office, and so on). You’ll find details of the recommended size of the operating concern (generally, the maximum number of characteristics is 50 and the maximum number of value fields is 120, but this can be extended) in SAP Note 1029391.

The combination of dimensions is known as the profitability segment. You can display the profitability segment for any of the line items in Figure 2.34 by selecting a line and clicking on the Profitability segment button; you’ll see the report shown in Figure 2.36. We’ve picked a line item that refers to a sales order, so most of the dimensions (material based and customer based) are filled. You’ll notice additional dimensions, such as those for WBS elements, that are not filled. We would see entries here if the costs for a WBS element had been settled.

Because the assignments within this schema are fairly dynamic with the assignments to sales organizations, distribution channels, divisions, and so on changing on a regular basis, CO-PA reports allow you to report either on the dimensions as posted (see Figure 2.33) or according to the current structure (in other words, following a realignment).

There are two types of fact tables, depending on whether you use account-based CO-PA or costing-based CO-PA or both. You’ll find a full description of the difference between the two approaches in SAP Note 69384.

- Costing-based CO-PA assigns all postings to value fields that capture the individual elements of a contribution margin (sales, cost of goods sold, general overhead, and so on). This approach provides the ability to break down account-level information into further detail, such as fixed and variable costs for the same cost element, and separate the components of the standard cost into different value fields.

  In costing-based CO-PA, the value fields are determined during implementation, so some teams break out the price conditions for the sales deductions into many separate value fields, whereas others lump them into one field. Most implementations distinguish between fixed and variable costs for their product cost estimate, but some implementations keep a lot of detail from their cost components, and others lump the cost components together. The same variability applies to allocations, order settlement, and the settlement of production variances and to the transfer of cost components from the Material Ledger.

- Account-based CO-PA records data to a cost element that represents the account used to post the data originally. This makes it much easier to reconcile the cost elements and the accounts by company code, business area, and so on. But you should be aware that low-level characteristics such as customers and products are not captured in the General Ledger, so they won’t be available for reconciliation.

The characteristics apply to both costing-based and account-based CO-PA. However, different fact tables are used. The transaction or fact tables for costing-based CO-PA are delivered with a placeholder for the operating concern (CE1XXXX) and generated on-site. The transaction tables for account-based CO-PA are exactly the same as those used for cost centers, orders, projects, and so on. If you use both approaches in the same operating concern, be careful to check which...
approach you select when calling reports or running transactions, because the results can look dramatically different. Figure 2.37 shows a line item report for account-based CO-PA. Again, we’ve selected the profitability segment, but you can see that the columns are completely different. This is because instead of assigning costs to value fields we’re looking at them by cost element.

If you are using only costing-based CO-PA and not account-based CO-PA, you may still discover records that appear to be posting to account-based CO-PA. These postings are made under a cost element but are assigned to what is known as a reconciliation object (object type REO) rather than genuine CO-PA characteristics. As the name implies, they are used for reconciliation purposes rather than for genuine profitability analysis.

If you use only costing-based CO-PA or not account-based CO-PA, you may still discover records that appear to be posting to account-based CO-PA. These postings are made under a cost element but are assigned to what is known as a reconciliation object (object type REO) rather than genuine CO-PA characteristics. As the name implies, they are used for reconciliation purposes rather than for genuine profitability analysis.

Figure 2.37 Line Item Report for Account-Based CO-PA

The only reports that are standard in CO-PA are the actual line items (Transaction KE24) and the plan line items (Transaction KE25). If the underlying tables are different at every site, so are the drill-down reports. Creating reports is part of the implementation effort for Profitability Analysis, because Transaction KE30 (Execute Report) only shows data if you’ve properly configured your operating concern and built the appropriate reports first. The drill-down potential of CO-PA is almost unlimited, with organizations slicing and dicing their data by customer, by product, by distribution channel, and so on to try to understand where and with whom they are making or losing money. Many also move the entire operating concern to SAP BW for analysis. We’ll return to this in Chapter 8. Others are starting to use SAP HANA (see Chapter 13) to explore their CO-PA data.

2.7 Summary

In this chapter, you learned about the line item reports for Cost Center Accounting, Internal Orders, Cost Object Controlling, and Profitability Analysis and looked at how to compare the actual costs captured in these line items with planned costs, budgets, and target costs as appropriate. We also looked at some tree reports for Product Cost Planning and Material Ledger/Actual Costing and saw how an operating concern is defined for Profitability Analysis.

As we work through the chapters that follow, we’ll refer to any reports that support the process, so you’ll find the master data reports in Chapter 3 and the line items for planning in Chapter 5. All reports shown in Chapter 1 through Chapter 7 are based on reporting capabilities inherent in the SAP ERP system and don’t require an additional data warehouse.

We’ll return to the subject of reporting in Chapter 8 to look at SAP BW and the case for moving data to a dedicated data warehouse. There we’ll also discuss some of the newer options made possible using the SAP BusinessObjects tools and specifically how to use a generic function in SAP List Viewer to call SAP Crystal Reports. We’ll make another visit in Chapter 13 when we look at how to work with reports in SAP HANA. But first, we’ll look at the master data that needs to be in place before you can run any of these reports.
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