Technical and Risk Management Reference Series

Security, Audit and Control Features

SAP® ERP

3rd Edition

Excerpt

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2. First section on major SAP Modules and Functionality

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1. Foreword

Enterprise resource planning (ERP) systems, such as SAP ERP, Oracle® E-Business Suite and PeopleSoft® Enterprise, are now pervasive in large enterprises worldwide. An ERP system is a packaged business software system that allows an enterprise to:
- Automate and integrate the majority of its business processes
- Share common data and practices across the entire enterprise
- Produce and access information in a real-time environment

ERP systems continue to transform enterprise business processes by automating manual tasks, such as authorizations, and empowering users to initiate transactions and monitor performance online. As a result, the integrity framework supporting these business processes has been transformed. The level of automated controls and the importance of logical access security and configuration controls have increased. The web enablement of ERP systems and the integration of back-end ERP systems with front-end web-enabled systems continue to transform business process and technical infrastructure risk/control frameworks.

SAP is one of the developers of enterprise applications. Its primary ERP product is SAP ERP Central Component (known as ECC but previously named SAP R/3). This third edition of the technical reference guide on the audit of SAP ERP is one in a series of three technical reference guides providing information relating to the world's three major ERP systems. The other guides in the series focus on Oracle E-Business Suite and PeopleSoft.

Some sections of the guides covering the introduction to ERP and strategic risk management in an ERP environment and directions in ERP audit are common to all three guides. The remaining sections covering ERP product-specific characteristics and auditing techniques are unique to each of the respective technical reference guides.

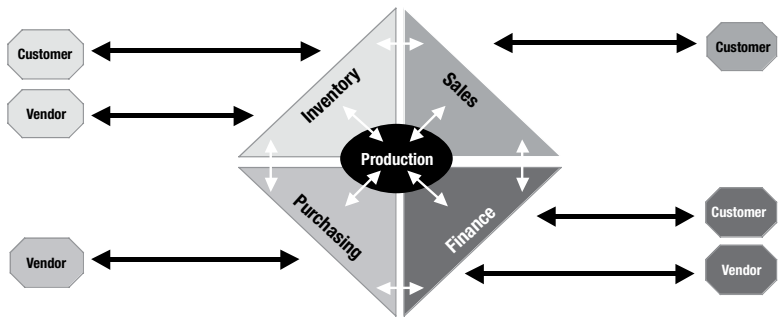
The purpose of the third edition of this research is to update the current best practices and identify future trends in ERP risk and control. The objective is to enable audit, assurance, risk and security professionals (IT and non-IT) to evaluate risks and controls in existing ERP implementations and to facilitate the design and building of better practice controls into system upgrades and enhancements. The publication is designed to be a practical how-to guide based on SAP ECC versions 5.0 and 6.0. However, most of the features and testing techniques described are also applicable to the earlier versions of SAP R/3, namely 4.6c and 4.7, which are also described in the first and second editions of this guide.

The popularity of the earlier editions of this guide confirmed the need for a series of audit guides for these products. Using a definitive approach, the authors sought to provide detail on testing techniques within the ERP products and their execution, rather than generic descriptions of the audit tests to be performed.

2. Introduction to Enterprise Resource Planning Systems and SAP ERP

Before ERP systems were developed, an enterprise's systems typically were set up around functions or departments (e.g., sales, purchasing, inventory, finance), as shown in **figure 2.1**, and not around the business processes (e.g., purchase-to-pay, order-to-cash). Functions evolved independently from each other. Each function may have had an individual application system or a number of systems to support it, with or without interfaces among the systems. This approach resulted in time delays, additional cost, the need for reconciliation, and data redundancy. Frequently, business controls had a significant manual component. Before the widespread use of ERPs, it was common for purchase orders (POs), for example, to be approved when generated. When the invoice arrived, the PO was either printed out again or retrieved from filing and then stapled to the invoice. The invoice was then approved for payment. The documents may have been scrutinized once again and approved during the check payment process.

Figure 2.1—Traditional Environment



- Functions are separate.
- Interface and communication links with other functions
- Variety of systems
- Each function maintains its own master data.
- Duplication of data entry

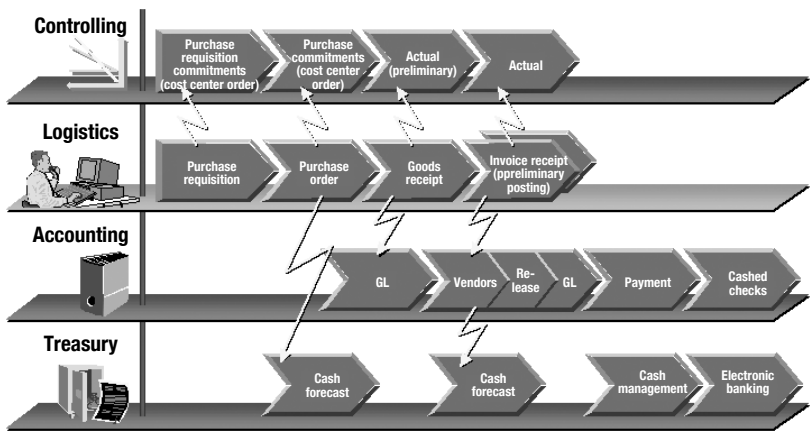
Non-ERP systems also suffer from a design problem. Typically, they are designed around disparate and independent modules that transmit transaction data among themselves by means of interfaces, where the information is normally summarized (e.g., totals or balances only). In such cases, further details of individual transactions often are difficult to ascertain, unlike the ability to drill down provided by ERP systems.

ERP systems have a business process focus. They grew out of the need to integrate separate sales operations planning (SOP) systems, materials resource planning

(MRP) systems (used to integrate material requirements with production, demand and capacity) and financial accounting systems in manufacturing organizations. The integration of these functional capabilities into an online and real-time application system designed to support end-to-end business processes enables enterprises to plan and optimize their resources across the enterprise. Their relational database tables are designed around a complete set of the core functions for an enterprise rather than disparate modules that merely pass transaction data from one module to another. In particular, with the SAP ERP software the Financial Accounting and Controlling modules are tightly integrated into the logistical chain that begins with purchasing and ends in sales and distribution. Every business transaction is recorded in the Financial Accounting and Controlling (or Management Reporting) modules automatically, if configured correctly. For example, consider the purchase of inventory in the SAP ERP software:

- A purchase requisition in the Procurements and Logistics Execution (MM) module creates a commitment in the Financial and Management Accounting, Controlling (CO) module, as shown in **figure 2.2**. This purchase requisition also can be evaluated in the Controlling component.
- The placement of the purchase order (MM module) will then confirm the commitment in CO and in the Treasury Applications (CM) module simultaneously.
- Entering the receipt of the goods ordered in MM will generate an accounting document in Financial and Management Accounting (FI), General Ledger (GL) and CO. The receipt will also update the material masters (stock records) in MM.
- Receipt of the invoice will generate an accounting document in FI accounts payable and also updates CO and CM.

Figure 2.2—ERP Process: Accounts Payable



An ERP environment operates in line with the business, online and in real time. Management has access to online and up-to-date information on how the business is performing. Common and consistent information is shared among application

modules and among users from different departments simultaneously. It has been observed that following implementation of an ERP, enterprises typically report completion of period or year-end closes in one or two days, as opposed to two to three weeks under their legacy system environment. Another key change brought about by the implementation of ERP systems is that the systems are owned and driven by business process owners/end users, with the technical support of information technology, rather than being owned and driven by the IT function alone.

Enterprises implementing ERP systems can achieve significant benefits such as:
- Reductions in inventory
- Redeployment of personnel into more value-producing activities
- Productivity improvements
- Order management cycle improvements
- Financial close/cycle reduction
- IT cost reduction
- Procurement cost reductions
- Cash management improvement
- Transportation/logistics cost reductions
- Hardware and software maintenance reductions
- On-time delivery improvements

The intangible benefits of an ERP implementation—while difficult to quantify—can deliver significant business value through improved enterprise capabilities, including:
- Information/visibility (e.g., drill-down capability, consistent and reliable information across business areas)
- New/improved processes
- Improved customer responsiveness
- Integration and standardization
- Flexibility
- Globalization

Since launching its first product offering almost 30 years ago, SAP has grown globally. It has approximately 12 million users and 96,400 installations in more than 120 countries and is the third-largest independent software company in the world. The company name, SAP, is a German acronym that loosely translates in English to Systems, Applications and Products in data processing.

Before SAP ERP, SAP had two main products: the mainframe system SAP® R/2® and the client/server-based system SAP R/3. Both R/2 and R/3 are targeted to business application solutions and feature complexity, business and organizational experience, and integration. The R/2 and R/3 terminology is sometimes taken to mean release 2 and release 3, respectively; however, this is not the case. The R in R/2 and R/3 stands for "real time." Release levels are annotated separately to the R/2 or R/3 descriptors. For example, in SAP R/3 4.6B, the 4 is the major release

number, the 6 is the minor release number following a major release, and the B is the version within a release.

R/3 was introduced in 1992 with a three-tier architecture paradigm. In recent years, SAP has introduced Service Oriented Architecture (SOA) as part of SAP ERP. This combines ERP with an open technology platform that can integrate SAP and non-SAP systems on the SAP NetWeaver® platform. Although SAP NetWeaver is not covered extensively in this book, it may be in future ISACA publications. The current core ERP solution offered by SAP is called SAP Enterprise Central Component (ECC 6.0), which is referred to in this book as SAP ERP, and will be the key focus of this book. **Figure 2.3** provides an overview of the SAP ERP architecture.

Figure 2.3—SAP ERP Architecture