The Impact of Information Technology on the Audit Process

Chapter 12
Learning Objective 1

Describe how IT improves internal control.
How Information Technologies Enhance Internal Control

Computer controls replace manual controls

Higher-quality information is available
Learning Objective 2

Identify risks that arise from using an IT-based accounting system.
Assessing Risks of Information Technologies

- Risks to hardware and data
- Reduced audit trail
- Need for IT experience and separation of IT duties
Risks to Hardware and Data

- Reliance on hardware and software
- Unauthorized access
- Systematic vs. random errors
- Data loss
Reduced Audit Trail

Visibility of audit trail

Lack of traditional authorization

Reduced human involvement

Detection risk
Need for IT Experience and Separation of Duties

- Reduced separation of duties
- Need for IT experience
Learning Objective 3

Explain how general controls and application controls reduce IT risks.
Internal Controls Specific to Information Technology

Information technology controls

Application controls

General controls
Relationship Between General and Application Controls

FIGURE 12-1  Relationship Between General and Application Controls

- Risk of unauthorized change to application software
- Cash Receipts Application Controls
- Sales Application Controls
- Other Cycle Application Controls
- Payroll Application Controls
- General Controls
- Risk of unauthorized master file update
- Risk of system crash
- Risk of unauthorized processing
### Categories of General and Application Controls

**TABLE 12-1 Categories of General and Application Controls**

<table>
<thead>
<tr>
<th>Control Type</th>
<th>Category of Control</th>
<th>Example of Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>General controls</td>
<td>Administration of the IT function</td>
<td>Chief information officer or IT manager reports to senior management and board.</td>
</tr>
<tr>
<td></td>
<td>Separation of IT duties</td>
<td>Responsibilities for programming, operations, and data control are separated.</td>
</tr>
<tr>
<td></td>
<td>Systems development</td>
<td>Teams of users, systems analysts, and programmers develop and thoroughly test software.</td>
</tr>
<tr>
<td></td>
<td>Physical and online security</td>
<td>Access to hardware is restricted, passwords and user IDs limit access to software and data files, and encryption and firewalls protect data and programs from external parties.</td>
</tr>
<tr>
<td></td>
<td>Backup and contingency planning</td>
<td>Written backup plans are prepared and tested regularly throughout the year.</td>
</tr>
<tr>
<td></td>
<td>Hardware controls</td>
<td>Memory failure or hard drive failure causes error messages on the monitor.</td>
</tr>
<tr>
<td>Application controls</td>
<td>Input controls</td>
<td>Preformatted screens prompt data input personnel for information to be entered.</td>
</tr>
<tr>
<td></td>
<td>Processing controls</td>
<td>Reasonableness tests review unit-selling prices used to process a sale.</td>
</tr>
<tr>
<td></td>
<td>Output controls</td>
<td>The sales department does postprocessing review of sales transactions.</td>
</tr>
</tbody>
</table>
The perceived importance of IT within an organization is often dictated by the attitude of the board of directors and senior management.
Segregation of IT Duties

FIGURE 12-2  Segregation of IT Duties

Chief Information Officer or IT Manager

- Security Administrator
  - Systems Development
    - Systems Analyst
    - Programmers
  - Operations
    - Computer Operators
    - Librarian
  - Data Control
    - Network Administrator
    - Data Input/Output Control
    - Database Administrator
Systems Development

Typical test strategies

- Pilot testing
- Parallel testing
Physical and Online Security

Physical Controls:
- Keypad entrances
- Badge-entry systems
- Security cameras
- Security personnel

Online Controls:
- User ID control
- Password control
- Separate add-on security software
Backup and Contingency Planning

Offsite storage of critical files is a key element to a backup and contingency plan.
Hardware Controls

These controls are built into computer equipment by the manufacturer to detect and report equipment failures.
Application controls are designed for each software application.
Input Controls

These controls are designed by an organization to ensure that the information being processed is authorized, accurate, and complete.
Batch Input Controls

- Financial total: Total for all records in a batch
- Hash total: Total of codes from all batch records
- Record count: Total of records in a batch
Processing Controls

Validation test
- Correct file, database, or program?

Sequence test
- Correct processing order?

Arithmetic accuracy test
- Accuracy of processed data?

Data reasonableness test
- Data exceeds preset amounts?

Completeness test
- Completeness of record fields?
Output Controls

These controls focus on detecting errors after processing is completed rather than on preventing errors.
Learning Objective 4

Describe how general controls affect the auditor’s testing of application controls.
Impact of Information Technology on the Audit Process

- Effects of general controls on system-wide applications
- Effects of general controls on software changes
- Obtaining an understanding of client general controls
- Relating IT controls to transaction-related audit objectives
- Effect of IT controls on substantive testing
Auditing in IT Environments with Varied Complexity

LESS

Audit around the computer
Smaller companies
IT controls < effective

MORE

Audit though the computer
Parallel simulation
Test data
# Auditing Around and Through the Computer

<table>
<thead>
<tr>
<th>Internal Control</th>
<th>Auditing Around the Computer Approach</th>
<th>Auditing Through the Computer Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit is approved for sales on account.</td>
<td>Select a sample of sales transactions from the sales journal and obtain the related customer sales order to determine that the credit manager’s initials are present, indicating approval of sales on account.</td>
<td>Obtain a copy of the client’s sales application program and related credit limit master file and process a test data sample of sales transactions to determine whether the application software properly rejects those test sales transactions that exceed the customer’s credit limit amount and accepts all other transactions.</td>
</tr>
<tr>
<td>Payroll is processed only for individuals currently employed.</td>
<td>Select a sample of payroll disbursements from the payroll journal and verify by reviewing human resource department files that the payee is currently employed.</td>
<td>Create a test data file of valid and invalid employee ID numbers and process that file using a controlled copy of the client’s payroll application program to determine that all invalid employee ID numbers are rejected and that all valid employee ID numbers are accepted.</td>
</tr>
<tr>
<td>Column totals for the cash disbursements journal are subtotaled automatically by the computer.</td>
<td>Obtain a printout of the cash disbursements journal and manually foot each column to verify the accuracy of the printed column totals.</td>
<td>Obtain an electronic copy of the cash disbursements journal transactions and use generalized audit software to verify the accuracy of the column totals.</td>
</tr>
</tbody>
</table>
Learning Objective 5

Use test data, parallel simulation, and embedded audit module approaches when auditing through the computer.
Test Data Approach

1. Test data should include all relevant conditions that the auditor wants tested.

2. Application programs tested by the auditors’ test data must be the same as those the client used throughout the year.

3. Test data must be eliminated from the client’s records.
Test Data Approach

Input test transactions to test key control procedures

Application programs (assume batch system)

Control test results

Master files

Transaction files (contaminated?)

Contaminated master files
Test Data Approach

Control test results

Auditor makes comparisons

Auditor-predicted results of key control procedures based on an understanding of internal control

Differences between actual outcome and predicted result
Parallel Simulation

The auditor uses auditor-controlled software to perform parallel operations to the client’s software by using the same data files.
Parallel Simulation

Auditor makes comparisons between client’s application system output and the auditor-prepared program output.

Exception report noting differences.
Embedded Audit Module Approach

Auditor inserts an audit module in the client’s application system to identify specific types of transactions.
## Embedded Audit Module Approach

### TABLE 12-5 Common Uses of Generalized Audit Software

<table>
<thead>
<tr>
<th>Uses</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verify extensions and footings</td>
<td>Verify the accuracy of the client’s computations by calculating information independently</td>
<td>Foot accounts receivable trial balance</td>
</tr>
<tr>
<td>Examine records for quality, completeness, consistency, and correctness</td>
<td>Scan all records using specified criteria</td>
<td>Review payroll files for terminated employees</td>
</tr>
<tr>
<td>Compare data on separate files</td>
<td>Determine that information in two or more data files agrees</td>
<td>Compare changes in accounts receivable balances between two dates using sales and cash receipts in transaction files</td>
</tr>
<tr>
<td>Summarize or resequence data and do analyses</td>
<td>Change or aggregate data</td>
<td>Resequence inventory items by location to facilitate physical observation</td>
</tr>
<tr>
<td>Select audit samples</td>
<td>Select samples from machine-readable data</td>
<td>Randomly select accounts receivable for confirmation</td>
</tr>
<tr>
<td>Print confirmation requests</td>
<td>Print data for sample items selected for confirmation testing</td>
<td>Print customer name, address, and account balance information from master files</td>
</tr>
<tr>
<td>Compare data obtained through other audit procedures with company records</td>
<td>Compare machine-readable data with audit evidence gathered manually, which is converted to machine-readable form</td>
<td>Compare confirmation responses with accounts receivable master files</td>
</tr>
</tbody>
</table>
Learning Objective 6

Identify issues for e-commerce systems and other specialized IT environments.
Issues for Different IT Environments

- Network Environments
- Database Management Systems
- Outsourced IT
- e-Commerce systems
End of Chapter 12