CHAPTER 1

THE INFORMATION SYSTEM: AN ACCOUNTANT’S PERSPECTIVE

REVIEW QUESTIONS

1. Operational, operations management, middle management, and top management. Horizontal flows support operation-level tasks. The information is highly detailed about the day-to-day operations. Vertical flows distribute summarized information to managers at all levels, and this information flows upward. Instructions, quotas, and budgets also flow downward.

2. Data are facts that are collected in a “raw” form and made meaningful through processes such as sorting, aggregating, classifying, mathematically manipulating, and summarizing. The meaningful data is considered to be information. Information Systems are the formal procedures by which data are collected, stored and processed into the system and distributed to users.

3. AISs process financial transactions and certain nonfinancial transactions that directly affect the processing financial transactions. The external financial reporting documents of AIS are subject to legal and professional standards. Consequently, management and accountants have greater legal responsibility for AIS applications than for MIS applications. The MIS processes nonfinancial transactions that are outside the scope of the AIS. MIS applications expand the information set provided to such areas as production, sales, marketing, and inventory management. MIS often draws from and builds on data from the AIS.

4. Revenue cycle, expenditure cycle, and conversion cycle.

5. Reports used by management, which the company is not obligated by law, regulation, or contract to provide. These are often used for internal problem-solving issues rather than by external constituents.

6. Relevance, accuracy, completeness, summarization, and timeliness.

7. Relevance and efficiency.

8. Data attribute (field), record, file, and database.

9. Storage, retrieval, and deletion.

10. Feedback is output that is sent back to the system as a source of data. Feedback is useful because it can be used to initiate or adjust the system processes.

11. A. to support the stewardship function of management,

B. to support the decision-making processes of managers, and

C. to support the day-to-day operations of the firm.

12. Stewardship is the responsibility of management to properly utilize the resources of the firm entrusted to them. Information systems provide management with reports to better manage the resources and also provide responsibility reports by which management may be evaluated.

13. A. Materials Management

 1. purchasing

 2. receiving

 3. stores

B. Production

 1. production planning

 2. quality control

 3. maintenance

C. Marketing

 1. advertising

 2. market research

 3. sales order processing

D. Distribution

 1. warehousing

 2. shipping

E. Personnel

 1. recruiting

 2. training

 3. benefits

 4. counseling

F. Finance

 1. portfolio management

2. treasury

 3. credit

 4. cash disbursement

 5. cash receipt

G. Accounting

 1. inventory control

2. cost accounting

3. payroll

4. accounts payable

5. accounts receivable

6. billing

7. fixed-asset accounting

 8. general ledger

H. Computer Service

 1. data processing

 2. systems development and maintenance

3. database administration

14. Internal auditors are responsible for in-house appraisal of the financial reporting system. Internal auditors are concerned with deterring and detecting fraud and for conducting EDP audits. External auditors are independent CPAs engaged by the firm to attest to the completeness and accuracy of the financial statements. External auditors work together with the internal auditors.

15. The database administrator is responsible for the security and integrity of data stored in a central database.

16. The role of the accounting function is to manage the financial information resources of the firm. First, the accountants must capture and record business events of a firm and their financial impact. Secondly, the accounting function distributes transaction information to decision makers and operations personnel to help them coordinate their many tasks. The accountants must also assign accountability for each of these tasks.

17. In a centralized data processing approach, the computer services function is centrally located. The databases are housed in one place where all of the data processing occurs by one or more main computers. Systems professionals perform all systems development and maintenance work for the entire organization. End users wishing to have new systems or features must submit a formal request to this group and are usually prioritized and placed in a queue.

 In a distributed data-processing approach, the CPUs are spread out and control over data and processing is at the information processing unit (IPU) level. Thus, end users have more influence over the systems development projects, which are typically handled by systems professionals at the IPU level.

18. Data processing is organized around several information processing units, which are distributed throughout the organization and placed under the control of end users. The central computer services are eliminated or minimized.

19. Enterprise Resource Planning (ERP) is an information system model that enables an organization to automate and integrate its key business processes. ERP breaks down traditional functional barriers by facilitating data sharing, information flows, and the introduction of common business practices among all organizational users.

20. In addition to being users, accountants also play key roles as system designers and system auditors.

21. The attest function is performed by an independent certified public accountant who expresses an opinion about the fairness of a client-firm’s financial statements.

22. Financial Services (Advisory Services) pertains to professional services that are designed to improve the quality of information, both financial and non-financial, used by decision makers. The domain of advisory services is intentionally unbounded so that it does not inhibit the growth of future services that are currently unforeseen.

For example, advisory services may be contracted to provide information about the quality or marketability of a product. Advisory services are intended to help people make better decisions by improving information. This information may come as a by-product of the attest function, or it may ensue from an independently motivated review.

23. IT auditing is part of a broader financial audit in which the auditor attests to the integrity of elements of the organization’s information system that have become complicated by computer technology.

24. The conceptual system must first be determined. It specifies the nature of the information required, how and when it is to be collected, and who is the user. For each conceptual system, many different physical configurations may be possible. The physical system is the medium and method used to collect the data, process it, and disseminate the resulting information.

25. The audit committee of the board of directors of publicly traded companies is a subcommittee that has special responsibilities regarding audits. The audit committee is usually composed of three people who should be outsiders (not associated with the families of executive management nor former officers, etc.). With the advent of the Sarbanes-Oxley Act, at least one member of the audit committee must be a “financial expert.” The audit committee serves as an independent “check and balance” for the internal audit function and liaison with external auditors. SOX mandates that external auditors now report to the audit committee, which hires and fires auditors and resolves disputes. To be effective, the audit committee must be willing to challenge the internal auditors (or the entity performing that function) as well as management when necessary. Part of the role of committee members is to look for ways to identify risk. In general, they become an independent guardian of the entity’s assets by whatever means is appropriate.

26. Sometimes fraud audits are initiated when corporate management suspects employee fraud. Alternatively, boards of directors may hire fraud auditors to investigate their own executives if theft of assets or financial fraud is suspected.

27. The independence and competence of the internal audit staff determine the extent to which external auditors may cooperate with and rely on work performed by internal auditors. Some internal audit departments report directly to the controller. Under this arrangement, the internal auditor’s independence is compromised, and the external auditor is prohibited by professional standards from relying on evidence provided by the internal auditors. In contrast, external auditors can rely in part on evidence gathered by internal audit departments that are organizationally independent and report to the board of directors’ audit committee. A truly independent internal audit staff adds value to the audit process. For example, internal auditors can gather audit evidence throughout a fiscal period, which external auditors may then use at year end to conduct more efficient, less disruptive, and less costly audits of the organization’s financial statements.

28. The evidence auditors gather comes from two types of tests that they perform: (1) tests of controls and (2) substantive tests.

29. The characteristic that conceptually distinguishes external auditors from internal auditors is their respective constituencies: while external auditors represent outsiders, internal auditors represent the interests of the organization.

30. Network administration is responsible for the effective functioning of the software and hardware that constitute the organization’s network. This involves configuring, implementing, and maintaining network equipment. In addition, network administration is responsible for monitoring network activity to ensure that the network is being used in accordance with company policies and that it is secure from attack by hackers from outside the organization as well as unauthorized individuals within the organization.

31. Cloud computing, a variant of IT outsourcing, is location-independent computing whereby shared data centers deliver hosted IT services over the Internet. These services fall into three categories: software as a service (SaaS), infrastructure as a service (IaaS), and platform as a service (PaaS). An organization pursuing cloud computing signs a contract with an IT service provider to provide computing resources. When demand exceeds the provider’s IT capacity, it acquires additional capacity from data centers in the “cloud” that are connected via the Internet. Cloud computing contracts are flexible and relatively short term. In contrast, traditional outsourcing contracts tend to be fixed price, inflexible, and much longer term.

32. Organizations acquire information systems in two ways: they purchase commercial software and/or they build custom systems in-house from scratch.

33. Custom systems are more expensive than commercial packages because the organization must absorb all the development costs, which commercial vendors are able to spread across the entire user population.

34. Both small and large firms that have standardized information needs are potential customers for commercial software.

35. Simply stated, accounting activities must be separate and independent of the functional areas that manage and maintain custody of physical resources.

36. The designer must understand the nature of a particular audit risk before he or she can plan the design of internal control techniques needed to mitigate the risk. Also, the designer must understand audit objectives regarding evidence gathering so he or she may create a system that facilitates the subsequent extraction of audit evidence.

DISCUSSION QUESTIONS

1. The reporting requirements of external users such as lending institutions, the IRS, the SEC, and stockholders are subject to stringent reporting standards. Thus, firms have historically placed a very high emphasis on the accuracy of the AIS and the reports they produce for external agencies since failure to provide accurate and timely information carries heavy penalties. Internal users, such as managers, also need vital information to make good decisions. Firms are beginning to realize that the needs of these internal users are also very important to efficiently and effectively operate and plan for the future.

2. The level of detail necessary for the stockholders is highly aggregated and typically follows the format prescribed by the SEC and GAAP. Much more detailed information is necessary for middle management to plan and control operations. Highly detailed information is needed at the operations management level in order to run the day-to-day business processes and operations.

3. Financial transactions affect the accounts in the financial statements in some manner. Three examples are 1) use of equipment-depreciation, 2) payment of a bond payable, and 3) receipt of cash from a customer for a sale previously made on account. Nonfinancial transactions include business events that do not impact the financial statements. Three examples are 1) a book checked out by a student in a school library, 2) the recording of a customer complaint via a toll-free hotline, and 3) status reports of research and development projects.

4. Three functions of information systems are (1) to support the stewardship function of management (2) to support management decision-making and (3) to support the firm’s day-to-day operations. Managers of all areas typically need data from both the AIS and the MIS. If the data needed by managers for decision-making processes are located in two or more datasets, the preparation of reports is both inefficient and expensive. Further, a lack of coordination between the two datasets can result in data that is not consistent and is unreliable.

5. The transaction processing systems only differ in the types of data elements collected. Both service and manufacturing industries need to collect data regarding business processes. While a manufacturing firm may collect data regarding the amount of scrap generated at a particular workstation, a service firm, such as a public accounting firm, needs to collect data regarding the number of hours spent by staff to verify cash balances. Transaction processing systems are equally important to both types of industries.

6. The General Ledger System (GLS) summarizes all of the transaction cycle activity and general journal entries. The GLS provides most of the input in the Financial Reporting System (FRS). The FRS communicates information from the GLS to the external users. The FRS often collects additional pieces of information other than that which is found in the GLS. An example of this is when a pending lawsuit is likely to be settled in the next year. The GLS would not have this information.

7. If the collected data are not accurate and/or not correctly entered, then the resulting information will not be accurate. Also, if the data processing system is not correctly processing the information, then the resulting information will also be incorrect. If the database is not accurately maintained over time, again the resulting information will be incorrect.

8. Efficiency is crucial to AIS. The cost of collecting and producing information should not outweigh its benefits. Further, the applications should be run in a manner that places the least strain on the overall system. For example, the printing of checks to vendors should not be done during the day if it slows down the online sales order processing system in a multitasking environment.

 In order for a system to be effective, the appropriate data should be processed, and the resulting information disseminated to the appropriate users. For example, an accounts receivable delinquent report should be sent to the collection department in a timely fashion, so that measures can be taken to collect the funds. The ability to react to a change is very important, especially in an FRS where reporting requirements and standards change frequently.

9. This statement means that the accounting system is a representation of the operations of a firm. As machines operate, workers perform their duties, raw materials are transferred into finished goods and cash flows are exchanged between suppliers and customers, the accounting system must be continuously updated to accurately reflect these actions. This conceptual flow is crucial because it allows management to view in summary and in detail the financial effects of these operations on the firm.

10. Accounting independence is important because the separation between the record-keeping functions and the physical resources is crucial. This concept is extremely important for cash receipts operations. The person in charge of deposits of currency and check receipts should not be allowed to reconcile the sales records to the cash deposits and/or the bank account. If these duties are not separated, then the cash receipts clerk could steal money and cover it up during the reconciliation process.

11. The internal auditors are responsible for detecting and pursuing fraud within the firm. If management-level employees are involved, the internal auditors may fear losing their jobs if they blow the whistle on such activities. Thus, the internal auditors should report to the board of directors so that they do not fear any repercussions of their actions from top management.

12. In a centralized data-processing environment, the computer services personnel are all housed in one department where all of the systems development and maintenance takes place. End users must formally request any additions or enhancements to the current system. In a distributed data processing (DDP) system, the systems professionals may still be housed together or they may be located throughout the various segments of the organization. End users gain more control over their data and applications. DDP is becoming more and more popular as networking computers is becoming easier and more commonplace.

13. The conceptual system represents the logic and decision rules to be applied, while the physical system represents the means of accomplishing the tasks. Many different possibilities (physical systems) may be available to accomplish the conceptual system. The accountant is important in the design of the conceptual system; however, system designers may dominate in the tasks of physical design because of the technical nature of the solution. The accountant should still be involved in the process, although he/she may only participate in an advisory role.

14. To be effective, the audit committee must be willing to challenge the internal auditors (or the entity performing that function) as well as management when necessary. Part of the role of committee members is to look for ways to identify risk. For instance, they might serve as a sounding board for employees who observe suspicious behavior or spot fraudulent activities. In general, they become an independent guardian of the entity’s assets by whatever means is appropriate. Corporate frauds often have some relationship to audit committee failures. These include lack of independence of audit committee members, lack of experienced members on the audit committee, inactive audit committees, and the total absence of an audit committee.

15. Yes and No. Virtually all publicly traded firms have computerized AISs as well as most small- and medium-sized firms. Audits of non-computerized systems are becoming rare. Thus, one may say that virtually all auditors must deal with electronic processing of data. However, certain auditing personnel, known as IT auditors, have special skills, which allow them to focus on the computer “processing.” Thus, distinguishing these auditors from auditors who do not have such skills may still be appropriate.

16. Cloud computing, is location-independent computing whereby shared data centers deliver hosted IT services over the Internet. The concept can be equated to the way in which electricity is delivered to a private home. The homeowner enters into a contract with the local public utility company to deliver electricity as needed. The public utility company may generate some of this electricity, but during high demand periods it will go to the national electric grid to tap into the production of other electricity generators across the country. Similarly, an organization pursuing cloud computing signs a contract with an IT service provider to provide computing resources. When demand exceeds the provider’s IT capacity, it acquires additional capacity from data centers in the “cloud” that are connected via the Internet. A potential risk to the client firm is that it does not necessarily know where its data are actually being processed, just as the homeowner does not know where his or her electricity is being generated. The advantage to the client organization is access to whatever computing power it needs, while it pays only for what it uses.

17. The accounting function provides record-keeping services for all of the operations and day-to-day activities of other departments, which affect the financial position of the organization. Record-keeping tasks must be kept separate from any area that has custody over assets. Thus, the accounting function must remain independent so that the protection of the firm’s assets is carried out in an environment with minimum possibilities for theft.

18. An external audit is an independent attestation performed by an expert—the auditor—who expresses an opinion regarding the presentation of financial statements. CPAs who work for public accounting firms that are independent of the client organization being audited perform this task, known as the attest function. The audit objective is always associated with assuring the fair presentation of financial statements. These audits are, therefore, often referred to as financial audits. The evidence auditors gather comes from two types of tests that they perform: (1) tests of controls and (2) substantive tests.

19. Corporate management has long complained about the administrative burden and high cost associated with managing and maintaining IT functions. In an effort to bring costs under control and to escape their IT headaches, many corporate executives look to IT outsourcing. Under this practice the organization sells its IT resources (hardware, software, and facilities) to a third-party outsourcing vendor such as HP Enterprise Services (formally EDS). The outsourcing organization then leases back IT services from the vendor for a contract period of typically between five and ten years. A variant of IT outsourcing, called cloud computing, is location-independent computing whereby shared data centers deliver hosted IT services over the Internet. These services fall into three categories: software as a service (SaaS), infrastructure as a service (IaaS), and platform as a service (PaaS).

MULTIPLE CHOICE

1. A

2. B

3. C

4. A

5. C

6. B

7. A

8. B

9. D

10. B

11. D

12. D

13. B

14. A

PROBLEMS

1. a. S

b. I

c. S

d. T

e. S

f. S

g. S

h. I

i. T

j. S

2. Redraw the diagram presented Problem 2. Label each element in the diagram and briefly describe its role and key features.

ANS:

**End users** are both external and internal. External users include creditors, stockholders, potential investors, regulatory agencies, tax authorities, suppliers, and trading partners (customers and suppliers). Internal users include management at every level of the organization, as well as operations per­sonnel.

**Data sources** are financial transactions that enter the information system from either internal or external sources. External financial transactions are economic exchanges with other business entities and individuals outside the firm. Examples include the sale of goods and services, the purchase of inventory, the receipt of cash, and the dis­bursement of cash (including payroll). Internal financial transactions involve the exchange or movement of resources within the organization. Examples include the movement of raw materials into work-in-process (WIP), the application of labor and overhead to WIP, the transfer of WIP into finished goods inventory, and the depreciation of plant and equipment.

**Data collection** is the first operational stage in the information system. The objective is to ensure that event data entering the system are valid, complete, and free from material errors. Should transaction errors pass through data collection undetected, the system may process the errors and generate erroneous and unreli­able output resulting in incorrect actions and poor decisions by the users.

**Data processing involves converting data into information**. Examples of data processing tasks include mathematical algorithms (such as linear programming models) used for production scheduling applications, statistical techniques for sales forecasting, and posting and summarizing procedures used for accounting applications.

**Database management** is responsible for administering the organization’s data repository, which involves three fundamental tasks: storage, retrieval, and deletion. The physical form of a corporate database will vary depending upon the technology in place. For accounting/business purposes data are organized into a logical hierar­chy that consists of attributes, records, and files.

**Information generation** is the process of compiling, arranging, formatting, and presenting informa­tion to users. Information may take the form of an operational document such as a sales order, a structured report, or a message on a computer screen. Regardless of physical form, useful information has the following characteristics: relevance, timeliness, accuracy, completeness, and summarization.

**Feedback** is a form of output that is sent back to the system as a source of data and is used to initiate or alter a process. For example, an inventory status report signals the inventory control clerk that items of inventory have fallen to, or below, their minimum allowable levels. Internal feedback from this information will initiate the inventory ordering process to replenish the inventories. Similarly, external feedback about the level of uncollected customer accounts may be used to adjust the organization’s credit-granting policies.

3. Commercial.

This company has non-unique information needs that can be satisfied with a commercial system that is completely finished, tested, and ready for implementation. Typically, commercial systems are general-purpose or customized to a specific industry. The end user will have standard business practices that permit the use of “canned” or “off-the-shelf” systems that can be employed with little or no modification.

Custom.

Larger organizations such as this one with unique information needs often develop systems in in-house. That would be the solution in this case, assuming that no commercial package is available to this company.

ERP.

This large organization’s needs are diverse and complex, but not unique. Large scale **enterprise resource planning (ERP)** sys­tems are comprised of thousands of small standardized program modules. From this vast array of options the IT team can configure the system by selecting those modules that support the organization’s specific information and data processing needs.

4. a. FRS

b. TPS

c. MRS

d. MRS

e. TPS

f. MRS

g. MRS

h. TPS

i. FRS

j. TPS

k. MRS

5.

6

 .

7. a. The production department’s vice president or manager should not supervise the inventory management tasks. The production department uses the raw materials and therefore should not have any custodial tasks over the storage of the inventory items. A separate materials management department should handle the purchasing of inventory items and the warehousing of raw materials. The production department may not take the time (and should not be wasting its time trying) to investigate the best possible prices for a given quality and quantity of goods. Further, the production department may be able to pilfer goods from the production line if a separate department is not controlling the release of raw materials for specific job lots. The production department should not be in charge of cost accounting. The cost accounting department should be separate since this department tracks the costs of the production process. If the cost accountants report to the production manager, they may be influenced to overlook some cost items or alter the amounts to make the cost center look better. Also, the production manager should not be in charge of payroll, he or she may have paychecks written for fictitious employees. The sales department should not be in charge of credit approvals. Salespeople’s compensation is typically tied to their sales figures, and thus salespeople have an incentive to write as many sales as possible without regard to the financial stability of the customer. Poor credit decisions may be made if the credit department reports to the sales manager. Further, the billing department should not report to the sales manager either because the salespeople may be tempted to issue unwarranted and unauthorized discounts to their most valuable customers. The finance department collects and distributes cash; therefore, it should not have custody over the accounts receivable and accounts payable. A separate accounting function should provide a check and balance on the cash collections and disbursements.

b. A reorganization is presented in the following diagram. Two new positions have been created: VP-Materials Management and VP-Accounting (or Controller). The VP-Finance is a “promotion” given to the financial manager.

8. Because businesspeople were not able to adequately express their needs and much of what they did express was not fully understood by the systems analysts, many new systems projects produced ineffective systems. Most business students now study the development process of information systems so they will be better able to communicate their information needs to system personnel and have an appreciation that clear expression of the problem by the user and better understanding of the business situation/problem environment by the system developer will enhance a projects deployment. Either avoiding jargon or fully explaining the terms will also help to close the communication gap.

9. Record Type Primary Key

Accounts Receivable Customer Number

Accounts Payable Vendor Number

Inventory Part Number

Customer Sales Order Sales Order Number

Purchase Orders to vendors Purchase Order Number

Cash Receipts from customers Receipt Number

Cash Disbursements to vendors Check Number

Employee Payroll Earnings records Employee Number

10. Data Attributes:

Accounts payable Record:

Invoice number (PK)

vendor number

amount

date due

date paid

discounts

Inventory:

part number (PK)

Description

amount on hand

unit price cost

Sales Price

economic order quantity

reorder point

Customer Sales Orders Record:

sales order number (PK)

customer number

item number

unit price

quantity

discount

date billed

date due

ship date

total (not required since it is a calculated amount)

Purchase Orders to Vendors:

purchase order number (PK)

vendor number

vendor’s part number

part number (our’s)

quantity

date ordered

date required

expected dollar amount

Cash Receipts from Customers:

cash receipt number (sequentially assigned) (PK)

customer number

invoice number

customer’s check number

amount received

date

Employee Payroll Earnings records

employee identification number (PK)

Hours worked-regular time

Hours worked-overtime

Current Gross Pay

Current federal income tax withheld

Current state income tax withheld

Current FICA tax withheld

Year to date hours-regular

Year to date hours-overtime

Year to date gross pay

Year to date federal income tax withheld

Year to date state income tax withheld

Year to date FICA tax withheld

11. a. Role of Internal Audit Function

i. Role of Management

SOX requires management of public companies to implement an adequate system of internal controls over their financial reporting process including transaction processing systems.

SOX requires the management to assess and annually report on effectiveness of internal controls. This addressing the following points:

1.Understand the flow of transactions, including IT aspects, in sufficient detail to identify points at which a misstatement could arise.

2.Using a risk-based approach, assess the design and operating effectiveness of selected internal controls related to material accounts.

3.Assess the potential for fraud and evaluate the controls designed to prevent or detect fraud.

4.Evaluate and conclude on the adequacy of controls over the financial statement reporting process.

5.Evaluate entity-wide (general) controls that correspond to the components of the COSO framework.

ii. Role of External Auditor:

The external auditor reviews the organization’s control structure per the COSO internal control model.

This includes the control environment, risk assessment, information and communications, monitoring, and control procedures.

The auditor issues an opinion on control adequacy and identifies any material weaknesses in internal controls.

iii. Role of Internal Auditor

The IA performs a wide range of activities on behalf of the organization:

including conducting financial audits

 examining an operation’s compliance with organizational policies

 reviewing the organization’s compliance with legal obligations

 evaluating operational efficiency

 detecting and pursuing fraud within the firm.

For cost reduction and efficiency purposes internal auditors often cooperate with and assist external auditors in performing aspects of financial audits including tests of controls.

For example, a team of internal auditors can perform tests of computer controls under the supervision of a single external auditor.

b. To Whom Should IA Report

 The Director of Internal Audits should report to the Board of Directors Audit Committee.

When an internal audit department reports directly to a department, the internal auditor’s independence is compromised and external auditor may not rely on evidence provided by the internal auditors.

External auditors can rely in part on evidence gathered by internal audit departments that are organizationally independent and report to the board of directors’ audit committee.

 c. Structure of Audit Committee

 The audit committee needs to be reconstituted to be in compliance with SOX.

The audit committee serves as an independent “check and balance” for the internal audit function and liaison with external auditors.

 To be effective:

The audit committee should consist of people who are outsiders (not associated with the families of executive management nor former officers, etc.).

With the advent of the Sarbanes-Oxley Act, at least one member of the audit committee must be a “financial expert.”

12. Internal Auditor Independence

 Response:

a. Internal auditor independence implies no subordination of judgment to another and arises from an independent mental attitude that views events on a factual basis without influence from organizational units to which IA is subordinate.

b. i. The internal auditor’s independence is not impaired by the preparation of policy statements on internal control. The preparation of policy statements to guide others in the development and implementation of internal controls is a responsibility of the internal audit staff.

 ii. Auditor independence is impaired to the extent that the internal auditor is involved in the design and installation of computerized internal accounting controls being tested. Little confidence can be placed in audit findings issued by the individual who designed and installed the system being audited.

 iii. The internal auditor’s independence is impaired by reconciling bank statements. To maintain independence, the auditor should not perform operational assignments that are included as part of the independent evaluation and verification of a proper system of internal control. Separation of duties must be maintained.

 iv. Objectivity is not impaired in the review of the budget for relevance and reasonableness if the internal auditor has no responsibility for establishing or implementing the budget. However, the review of variances and explanations would impair objectivity as this is an area that would normally be reviewed during an operational audit.

 v. The preparation of complex accounting transactions will materially impair the internal auditor’s objectivity by involving the auditor in day-to-day operations.

 c. The Director of Internal Audits should report to the Board of Directors Audit Committee.

 The independence and competence of the internal audit staff determine the extent to which external auditors may cooperate with and rely on work performed by internal auditors. When the internal audit department reports directly to a department, such as the controller, the internal auditor’s independence is compromised, and the external auditor is prohibited by professional standards from relying on evidence provided by the internal auditors. In contrast, external auditors may rely in part on evidence gathered by internal audit departments that are organizationally independent and report to the board of directors’ audit committee.