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BINUS UNIVERSITY

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for Leveraging Corporate Sustainability**

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PROCEEDINGS

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INFORMATION SYSTEMS AUDITING TOWARDS PURCHASE APPLICATION**Hj. Henny Hendarti, Skom, MM, Dr.**BINUS University
Email: henny@binus.edu
Natasya Hilman Hanafi**ABSTRACT**

The aim of writing this research report to understand current purchase information systems to ensure communication control, boundary, input, and output from the current systems is reliable and recommend improvement suggestions if there are weaknesses in the purchase application in general Hospital. Methodologies used in writing research report are book reviews or references and field study such as interviews, questionnaires for related parts, observation, examination of application use. The result achieved in information system auditing towards purchase application of medicines, I found weaknesses which had potential risk and needs improvement. Based on the auditing result by using many methodologies, I find good and bad control.

Keywords: Information system audit, purchase information system, information system audit towards purchasing application.

INTRODUCTION

1.1. Background

In a company's information system, there are always possibilities of problem which make the company suffer a loss; therefore, it need a good information system supported by a good mechanism control to ensure of guarantee that an information system has run well. In this chase, it needs auditing towards information system.

Purchasing activities in the general hospital basically consist of there purchase divisions. Equipment, apparatus, and medicines. The purchase of medicine is the busiest of all; therefore it needs an information system auditing towards purchase application to guarantee that the information system belongs to the general hospital has run well with approved control mechanism.

1.2. Coverage

Information system auditing towards purchase application of medicines of and limited in controlling which include

- General control. Namely, security control, and
- Application control which consist of controls of boundary, input and output, and communication in the general hospital.

The auditing will be performed by the method of auditing around the computer.

1.3. Purposes and Utilities

The purposes of information system auditing toward purchase application of medicines in the general hospital are as follows:

1. To ensure security control, communication, boundary, input, and output are reliable.
2. To recommend improvement proposal if they are weaknesses in the purchase application system in the general hospital.
3. To protect information system asset.

The utilities of information system auditing towards purchase of medicines in the general hospital are as follow:

1. To lessen potential risks faced by purchase information system
2. To guarantee the result of purchase information which improve protection towards assets, data integrity, effectiveness, and system efficiency.
3. To provide more accurate purchase information for management in making decision.

1.4. Research Methodologies

The research methodologies used in writing the research report are

1. Book reviews
2. Field Studies
Purchase information system analysis is performed by
 - a. Interviews
 - b. Questionnaires
 - c. Observation
 - d. Application use examination

SUPPORTING THEORY

2.1. the meaning of information system

According to Whiten, Bentley, Dittman (2004, p.12.), "information is an arrangement of people, data, process, and information technology that interact to collect, process, store and provide as output the information needed to support an organization," which means that information system is an organizing persons, data, processes and information technology which interact to collect, process, store and provide information output needed to support an organization.

According to O'Brien (2003, p.7), "information system can be any organized combination of people, hardware, software, communication networks, and data resources that collect, transform, and disseminate information in an organization," which means that information system is all management of people combination, hardware, software, communication networks, data resources which have been collected and spread information in the organization.

Therefore, I can conclude that information system is the management of persons, data processes, hardware, software, networks that produce information needed to support organization.

2.2.1. The Meaning Of Information System Auditing

According to Weber (1999, p.10), "information system auditing is the process of collecting and evaluating evidence to determine whether a computer system safeguards assets, maintains data integrity, allow organizational goals to be achieved effectively and uses resource efficiently, "which means that information system audit is a process of gathering and examining evidence to determine whether the computer system can protect assets, keeps data integrity, and enables to achieved organizational goals effectively, and utilizes resource efficiently.

According to CISA Review Manual (2005, p.35), "is auditing can be defined as any auditing that encompasses review and evaluation (wholly or partly) or automated information processing system related to non-automated process and the interface between them." Which means that all audits stress or review and evaluation on (in all or in part), automated information processing system and relates to non-automated process and interface between them.

Based on the above understanding, I can conclude that information auditing system is a process of collecting and evaluating auditing evident items which determine whether the company's computer system has used information system correctly and is able to support asset safeguard, maintains data integrity in achieving the company's goal effectively and efficiently.

2.2.2. The Purposes Of Information System Auditing

According to Weber (1999, p.11-12), in the board outline the purposes of information system Auditing are divided into four categories :

1. To safeguard the company's asset
2. To improve data integrity
3. To improve system effectiveness
4. To improve system efficiency

Information System auditing methods

According to Weber (1999, p.55-57), the methods of SI auditing include

1. Auditing around the computer,
Auditing around the computer includes giving audit opinions by examining and evaluating management control; then input and output are only for application system. The process of application is not examined directly. The auditor treats the computer as black box.
2. Auditing through the computer
Auditing through the computer is an approach as the auditor uses to examine logical process and control in the systems and to evaluate notes produced by the systems.

2.3. Management Security Control

According to Weber (1999, p.244), administrator of information systems security is responsible to ensuring that the information system asset is secure or safe. Information system assets which must be protected through security measurement can be classified into two category; namely,

1. Physical assets which includes personnel, hardware (Including storing media and equipment), facilities, documentation, and supplies.
2. Logical assets include data/ information and software.

2.4. Application Control

2.4.1. Input Control

According to Weber(1999,p.420-421), component in input subsystem is responsible for carrying data and instruction into the application systems. The two type of inputs must be validated. Every mistake detected must be controlled. The input control becomes very important because of three reasons; that is,

1. The total numbers of control in the input subsystems.
2. Input subsystems include the total number of routines
3. Input subsystem often become cheating target.

According to Purwono (2004,p.161), the mistake of result due to the mistakes in reading and typing of the operator; therefore, it needs verification which will examine recording result by resource document.

2.4.2. Output Control

According to Basslamah (2003,p.236-238), control over output is meant to determine that the data being processed is complete, accurate and distributed to the right men and on punctual time. According to IAI, the control means to give enough trust that

1. The result of processing is accurate and performed carefully.
2. Access toward output is limited for employees who have enough authorities.
3. Output is provide punctually for employees who have enough authorities.

Meanwhile, control on output on on-line system means to give trust that

1. Output accepted by business unit is accurate and performed and complete.
2. Output accepted by business unit is classified.
3. Output distributed to the employees is authorized.

2.4.3. Boundary Control

According to Weber(1999,p.370), control in boundary subsystem has three main purposes:

1. To determine identity and the truth of the users from the computer systems. (the systems must guarantee that the users is the true users)
2. To determine identity and the truth of the users from the source in the users hope to use.
3. To limit the actions taken by the users who uses computers source to do the approved actions.

According to Weber(1999,p.382), some password management principles; i.e.,access control mechanism orders to change password periodically, it must limit a total numbers if trials to enter password.

According to Stiawan(2005,p.167), some tips to make password; that is, do not ever use the words from dictionary. Use word-number combination. Make password at minimum of five characters. Password it easy to remember.

According to Weber(1999,p.371-373) some control types used in boundary subsystem:

1. Cryptographic controls

Cryptographic controls are designed to protect the secrecy of data and safeguard unlicensed data change.

The control become foundation for some boundary controls such as password, PIN, and digital signatures.

There are three classes for achievement technique:

1. Transposition Ciphers
 2. Substitution Ciphers
 3. Product Ciphers
- #### 2. Access Controls

Access controls limit the use of computer systems source by approved users and guarantee that the users obtain the right computer system source. At first, access controls is useful for determining the clear understanding why we need access controls to point the function to many computers system.

In the distributed source environment, auditors must pay two attentions for access controls. Firstly, they need to determine data integrity maintenance. Secondly, they must be able to operate from available access controls mechanism. For all available application, the auditors must determine where access controls are chosen to fulfill system need.

An access control mechanism proceeds users' demand to identify themselves toward source through three steps. Firstly, the users identify themselves through mechanism, therefore, it indicates their purpose to ask system source. Secondly, the users must prove themselves, and the available mechanism must prove itself.

Authentication is two way process. Not only mechanism which has the authorized users, but also the authorized users must be sure to have the right mechanism. Thirdly, the users ask specific source and specifies the purpose of their actions towards the source. Formerly, mechanism access keeps information or the users, source which they can access, and secret safeguards actions towards source which they can access, and secret safeguards actions towards source which they must be obey. The mechanism can allow or forbid the user's demand.

2.4.4. Communication Controls

According to Weber(1999,p.473), communication subsystem is responsible for moving data among all other subsystem in the system an move or receive data from the other systems. The physical manifestation lines which connect computer remote (control) that must interact one another.

2.4.4.1. Physical Component Controls

According to Weber(1999,p.473), one way to lessen loss has been known in the communication subsystem is by choosing reliable characteristic of physical components and feature and provide control of possible bad impact.

2.5. Purchase Information System

According to [http://help.sap.com/saphelp_erp_2005/helpdata/en/ob/2a6495507d1d18ee90000eb362fc2/frameset, htm](http://help.sap.com/saphelp_erp_2005/helpdata/en/ob/2a6495507d1d18ee90000eb362fc2/frameset.htm), purchasing information system describe data and process in purchasing.

according to Jones, Rama (2003, p. 374, 429) purchase cycle refer to the process of purchasing, receiving, and paying of goods of services received. Purchase module gives function for purchase cycle.

According to Arens and Loebbecke (2003,p .I), auditing is process of collecting and evaluating evident item of information which can be measured about economic entity which is performed by component and independent persons in order to determine and report information adjustment and approved criteria.

2.6. Risks

According to http://media.wiley.com/product_data/excerpt/29/07645393/0764539329.pdf, vulnerability and threat are not security risks however when threat are combine with vulnerability, risks are appears, which must be improved or fixed. The security experts often describe the risks by using the following equation.

$$\text{Risk} = \text{Threat} \times \text{Vulnerability}$$

There is a god reason for the use of multiplication operators to describe relationship between threat and vulnerability. High risks will appear only if threat and vulnerability are high.

INFORMATION AUDITING SYSTEM S TOWARD PURCHASE APPLICATION OF MEDICINES

3.1 Security Control Evaluation

Finding based on interview and observation:

- The present of antivirus in the system, but antivirus update does not work; therefore scanning cannot automatically be operated.
- The existence of procedure to anticipate damage/problems towards computer (server, computer terminal, computer client) and always provide in alert EDP staff to improve computer problem, beside special substitute CPU and monitors are provided to anticipate the malfunction of computer terminal and clients.
- The existence of backup procedure4 conducted once a week.
- The absence of fire detector in the server program and RDP room.
- There are four server; namely,
 - 2 data server : 1 mother server and 1 substitute server (for mirroring server).
 - 1 program server : 1 mother server and 1 substitute server (for mirroring server).
- Facility department has a duplication key for server room.
- Firewall is provided to anticipate hacking by hacker toward the system.
- Recovery process is performed if there is trouble such as virus also fix data recovery if the data stored to server through clients computer has trouble such as black out by restoring the data are not fully stored will automatically be stored temporarily in the client's computer hard disk until recovery performance; therefore, the data will be erased automatically from the hard disk.
- There are UPS and generator to anticipate the black out.

Input Control Evaluation

Finding based on the time of interview, observation and application use examination.

- Purchase data input method is performed by using keyboard.

- Color appearance and purchase application interface does not bother the user's sight or view in using application.
- Purchase application system is completed with help facility.
- Input performance in the interface of purchase application easy to understand and, it is used by user in inputting data
- Purchase data input is easily operated by the users.
- Purchase process is conduct by logistic department after receiving purchase orders of defect medicines from departments of pharmacy and chemist.
- Purchase data input is only performed by authorized person.
- There is a warning if there is a mistake in inputting the purchase data by users.
- To those who input purchase – data are identified.
- Source of document for purchase division which is going to be input must be authorized by the supervisor.

Output Control Evaluation

Finding based on the time of interview, observation an application use examination.

- Every report related to purchase always puts on date, month, and year.
- Page numbers are written on every report related to the purchase.
- By using ICRAM program, every document which related to the purchase (Letters of order, purchase order, and Mutation Letters) can be issued fast that can improve performance efficiency in logistic department.
- By using ICRAM program, daily purchase report issued by logistic department can be provided punctually.
- Purchase reports which are issued and distributed are sometimes not punctual in monthly purchase reports because it is set up manually which needs a lot of time (the making of report is not available in ICRAM program)
- A lot of report acknowledgements are not written in every monthly purchase report submitted to authorized persons.
- Employees who write the reports related to purchase must be responsible for every item written on the reports.
- There is a name of employee who issues the document / purchase order.
- Only authorized persons who can issue reports related to the purchase.

Boundary Control Evaluation

Finding based on the time of interview and application use examination.

- The user must enter user ID and Password to access purchase application.
- No minimum character limitation for password.
- Character in password are not combination of character/words and figures/numbers.
- To change password, users must fill in the form of password inquiry first so that I can be proceed by supervisor. The password determine by the user itself.
- There is not strict rule to change password periodically.
- When user enter password, it is shadowed with fence shape ("=")
- Special event occurred if user is mistakenly enter user's ID and password, he or she can see warning message which say, "username or password is wrong. Please repeat/try again," and every user who makes mistake, input password is written in the server and lock facility (application screen is shut automatically and return to windows) if the mistakes are made three times, but user can access again the program (weak look facility)
- No facility for password reminder.
- There is control in accessing different applications among each parts as user can only access specific module/menus in the purchase application based on the rights owned.

Communication control Evaluation

Finding based on the time of interview and application user examination.

- Sometimes there is a connection problem from client's computer to server, in general , it is caused by loose of cable.
- Never have any problem on network and network hardware because of intruders.
- There are switch and router used for connection and related by using UTP cable.
- If data sending is error, there will be warning as a sign that there is a problem in the network.
- Topology network is star.
- VPN (Virtual Private Network) is used to send data out of local network.
- Data sent through VPN will be encrypted first.
- When the electricity is blackout, the will be in temporary data storage in client's computer hard disks. And after the system returns to normal, the current data in temporary data storage will be erased automatically.

4.1 Conclusion

The conclusion is as follows :

1. In security control in purchase application in broad outlines is still not good because server program room has no fire extinguisher and detector.
2. In input control from purchase application in broad outlines is good. Data input is operated based on source documents. Inputting process is made by authority. It is made based on the date in source documents.
3. In output control for purchase application in broad outlines is still not good because the making of monthly purchase report is not through ICRAM programs; however, it is really needed.
4. In boundary control in purchase application in broad outlines is good because when user wants to enter the program, it indicates identification and authentication user as user must enter user's ID and password.
5. In communication Control in purchase application in board outlines is good because of link encryption implementation to protect data in communication line which connected on nodes in network.

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