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Accounting Information System in the Manual Purchase Cycle at Printing Enterprises in Hanoi

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Abstract

This study applied the theory of accounting information systems in the manual purchasing cycle applied to businesses. The accounting information system in the manual purchasing cycle is examined from two perspectives: Document flowcharts (DF) and data flow diagram (DFD). At the same time, the article applies the theory of physical control activities of SAS 78/COSO to evaluate accounting information systems. The article

presents the results of a survey and investigation on the current status of accounting information systems in the manual purchasing cycle at printing enterprises in Hanoi to evaluate the advantages and disadvantages of the cycle. Based on the current situation and application of relevant theories, the authors have proposed solutions to improve the accounting information system in the manual purchasing cycle of printing businesses in Hanoi.

Keywords: Accounting Information System, Purchasing Cycle, Manual, Physical Control Activities, Printing Business, Internal Control

1. Introduction

According to author James A. Hall's book Accounting Information System (2018), the accounting information system contains the following cycles: The sales cycle, the purchasing cycle, the wage cycle, fixed assets, the cycle of production, financial reports, and management reports. Author James A. Hall's academic work has offered a basic theoretical framework for developing an effective accounting information system and avoiding risks.

Thesis "Organizing Accounting Information Systems in Production and Business Enterprises under the Application of Information Technology" (2015) by author Vu Ba Anh. The thesis presents the contents of the organization of accounting information systems in manufacturing enterprises, including organization by people, Organization of accounting data, organization of accounting procedures, Hardware system organization, and Accounting Software Organization. Master's thesis "Organization of Accounting Information Systems Applied in Small and Medium Enterprises in Vietnam" (2012) by Pham Tra Lam, Thesis "Research on building accounting information systems in Vietnamese construction enterprises - Pilot implementation at Dat Viet Construction and Trading Investment Company" (2019) by Ph.D. student Le Viet Ha, thesis "The impact of accounting information systems on the performance of Vietnamese small and medium enterprises" (2023) by Ph.D. student Truong Van Tu. Thus, there have been many research topics on accounting information systems in enterprises, however, the main topics go into organizational research such as apparatus organization, document organization, and organizing accounting books.

Based on the results of previous research, the authors highlight topics that have not before been investigated in the study of accounting information systems from the standpoint of system processes and internal controls in accounting information systems. In addition, no research on accounting information systems in the manual purchasing cycle at printing enterprises in Hanoi has been conducted, and the author concluded that it is necessary to study the accounting information system in the manual purchasing cycle at printing enterprises in Hanoi to improve the accounting information system.

2. Literature Review

An information system is a set of legitimate procedures for collecting data, processing it into information, and transferring it to users. Information systems include input data, data processing, and output information. Accounting information system description tools include Data Flow Diagrams (DFD) and Document Flowcharts (DF).

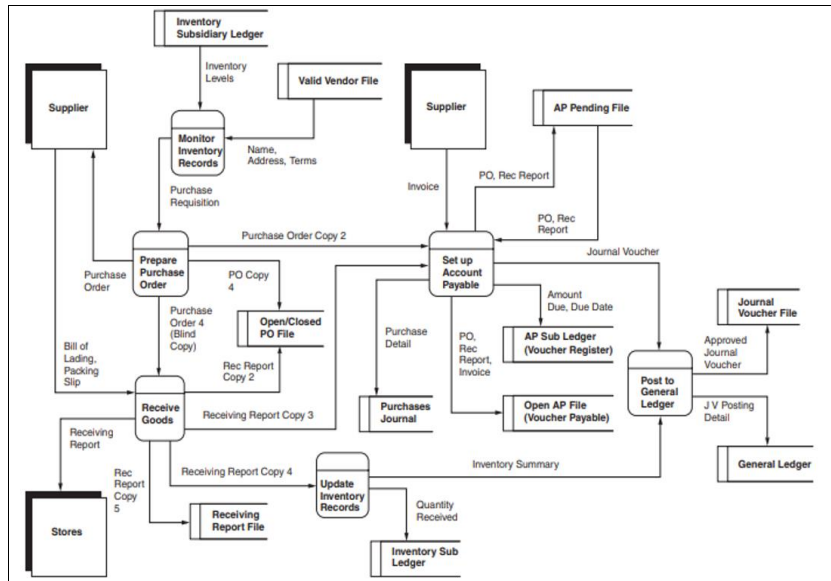
Internal controls are critical in accounting information systems. The internal control system's goal is to protect the company's assets, maintain the accuracy of accounting information, and improve the efficiency of the company's operations. According

to the SAS 78/COSO internal control framework, internal control consists of components: Control environment, risk assessment, information and communication, monitoring, and control activities. Control activities include six types of physical control operations: transaction authorization, segregation of duties, supervision, accounting records, access control, and independent verification. Control activities are used as the basis of internal control for the process of developing, implementing, and evaluating accounting information systems.

The purchase system is a collection of operations during the purchasing process and information processing activities related to purchases at a business. The purpose of the

purchasing system is to buy just the items required for the operation of the business at reasonable rates and of high quality.

The data flow diagram of the manual purchase cycle (Fig 1) is made up of activities, each of which performs a task, generates documents, and shows where those documents are circulated and stored. The activities in the manual purchasing cycle data flow diagram include Inventory detail book inspection, Purchase order preparation tasks, activities of preparing delivery reports, comprehensive inventory bookkeeping procedures, and specific accounting activities for liabilities.

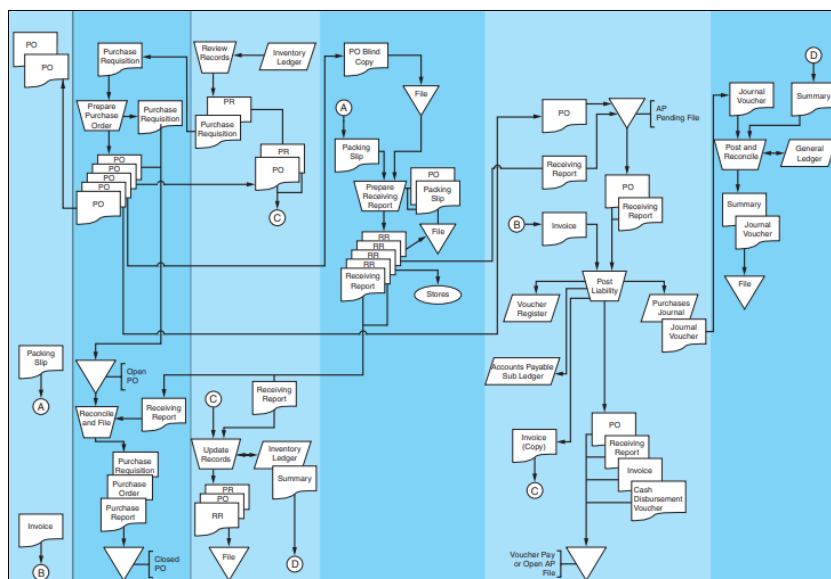


Hall, A. J. (2007) [5]

Fig 1: DFD for Manual Purchase System

The manual purchasing cycle document flowchart is that the complete purchase activity is considered from the perspective of the tasks of each department involved in the cycle. Here, the manual purchasing cycle involves the inventory accounting department, purchasing department, receiving department, liabilities accounting department, and

general accounting department. Each department is responsible for at least one operation. Departments can create vouchers or receive documents from other departments; these papers will be saved or sent to other departments after the activity is completed.



Hall, A. J. (2007) [5]

Fig 2: DF for Manual Purchase System

The following are the control actions performed throughout the manual purchasing system's construction:

Transaction Authorization: During the purchase cycle, the authorized inventory control department monitors inventory and determines the amount of inventory that needs to be purchased. Authorizing inventory control to identify things to acquire guarantees that there is always control over the necessary amount of inventory, just enough to have a business process, not too much inventory or a lack of production operations. The purchasing department has authority over supplier selection and purchase choices.

Segregation of Duties: Divide duties between the inventory control and purchasing departments. The inventory control department is authorized to determine which sorts of inventory must be acquired, but the purchasing department is authorized to make the purchase. The division of tasks in the purchase cycle is also reflected in the separation between the task of recording inventory records and controlling goods in the warehouse. Division of detailed bookkeeping duties and general books of liabilities.

Supervision: Goods are easily lost and stolen during the purchase cycle. The stage of receiving goods is risky. As a result, improved monitoring of the receiving process reduces the risk of asset loss. Monitoring should be increased to ensure that items are received in the correct quantity and quality before being stored.

Accounting Records: The purchase cycle relies on the document system to demonstrate that there are originating processes, including purchase requests, purchase orders, receipt reports, invoices, warehouse receipts... At the same time, the purchasing cycle employs a bookkeeping system to track inventory and liabilities, such as a liabilities detail book, an inventory detail book, a ledger of accounts, an inventory book, and so on.

Access Control: In the purchase cycle are two types of assets that need access control, namely inventory and bookkeeping. Inventory needs to control unauthorized access by using warehouse door locks, separating warehouses, and prohibiting non-duty personnel from entering the warehouse area. Accounting books are a form of asset that requires authorization for each individual to prepare, rotate, and store accounting books; only responsible individuals have access to accounting books.

Independent Verification: Independent confirmation is the inspection and re-verification of data and information amongst departments to ensure its applicability. During the purchase cycle, the liabilities accounting department re-verifies documents before recording liabilities. The liabilities department compares records such as purchase orders, receipt reports, and supplier bills. These three documents must match each other to prove that the purchase is valid: the purchase order shows the goods purchased according to the needs of the business; the receipt report must show that the goods received are by the purchase order; the invoice must show the goods, quantity, and price of the goods by the purchase order and receipt report. An independent verification activity performed at the purchase cycle is the general accounting department's reconciliation of the detailed summary table of liabilities sent by the liabilities accounting department with the ledger of accounts payable. Independent verification activities help prevent errors that may occur during the recording of system operations.

3. Research Method

Data collection methods:

1. *Collected data sources:* Collect from two main sources: primary and secondary data sources.
2. *How data is gathered:* Conduct data gathering at two printing enterprises in Hanoi by distributing surveys through email using the Google Docs application, conducting in-depth interviews, and conducting case studies.

Methods of data analysis:

Descriptive statistical methods and survey and synthesis methods aim to assess the current status of accounting information systems in the manual purchasing cycle at printing enterprises in Hanoi.

4. Actual Situation

Enterprises in Vietnam in general and printing enterprises in Hanoi in particular are facing many difficulties in terms of market and production technology. Products from China with low prices and a diverse range dominate the market. That poses a challenge to self-innovate from within printing enterprises in Hanoi to be able to stand firm and develop in that difficult competitive context. In the accounting information system at the enterprise, the purchase cycle is important, determining the input of the production and business process. The characteristics of production and business activities of printing enterprises are that they often print according to orders. In other words, as clients place orders, new businesses print. Production and business activities of printing businesses in general and purchasing and payment activities of the printing sector in particular have an impact on the development, evaluation, and improvement of these firms' accounting information systems. Materials in the printing business include papers: such as Couches Matt paper, Ford paper, Ivory paper, Duplex paper, Kraft paper, Carbon paper...

Current Status of the Handmade Purchase Cycle in Printing Enterprises in Hanoi

The manual purchasing cycle means that all activities of looking up data, making documents, recording general accounting books, and detailed accounting books are done manually, and can be done on paper or Word or Excel programs. In the survey companies, Hong Ky Company and Vietmax Company implemented the manual purchasing cycle. Hong Ky company's purchase cycle voucher flowchart is carried out by four departments: production department, accounting department, sales department, and warehouse.

- *Production department:* The production department determines the amount of materials needed to fulfill orders daily, based on production needs. The basis for the production department to determine the required amount of raw materials is the company's orders and production plans. Printing companies often produce according to customer orders, so determining the amount of material to use is relatively easy. The production department creates and sends a material request form to the accounting department. The request form specifies the type of material, the quantity of materials required, and the time frame for which materials are needed for manufacturing.

- Accounting Department - Step 1: When the accounting department receives a material request form from the production department, it analyzes the amount of raw materials in stock on the inventory detail books and compares the materials in stock to the production demands. The accounting department summarizes and creates a request form for acquiring materials for goods in the warehouse that are no longer available to fulfill production demands and sends it to the sales department.
- Sales Department: Sales representatives will get in contact with suppliers, get quotes, and place orders based on the request form for raw materials. The purchase order is made in two rows, one of which is sent to the supplier. The sales office has all of the remaining paperwork.
- Accounting Department - Step 2: When the supplier sends the products with invoices and discharge slips, the accounting department creates a 2-consecutive warehouse receipt and sends a warehouse receipt to the warehouse department. The remaining paperwork is retained in the accounting department.
- Warehouse department: - The warehouse department handles warehousing and bookkeeping before sending the warehousing receipts and documentation to the accountant.
- Accounting Department - Step 3: The accountant records inventory data, liabilities detail book, and applicable general book, and saves documents upon receipt of the warehouse entry slip.

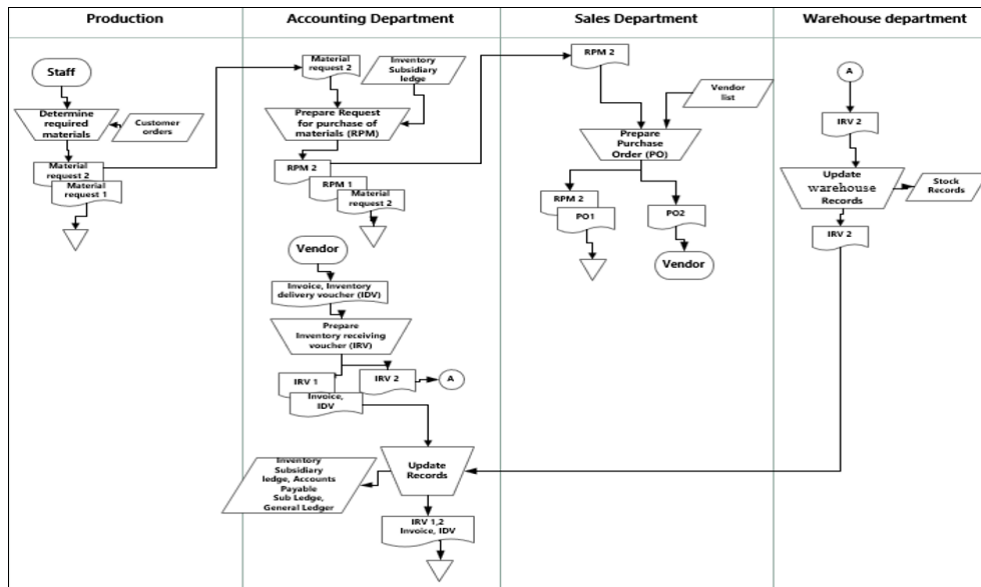


Fig 3: DF for Manual Purchase System at Hong Ky Co., Ltd

The warehouse area at Hong Ky Co., Ltd. is coordinated with the production department without separating the warehouse area, and raw material management activities are not strictly enforced. Sometimes the amount of raw materials on hand is excessive in comparison to current demand. Sometimes the amount of raw materials in stock is too much compared to current demand.

The manual purchase system of Hongky Co., Ltd. can be depicted by the data flow diagram (Fig 4). The diagram depicts Hong Ky Company's manual purchase cycle, which consists of six activities: Determine required materials, Prepare Request for purchase of materials (RPM), Prepare Purchase Order (PO), Update warehouse Records, Update Records.

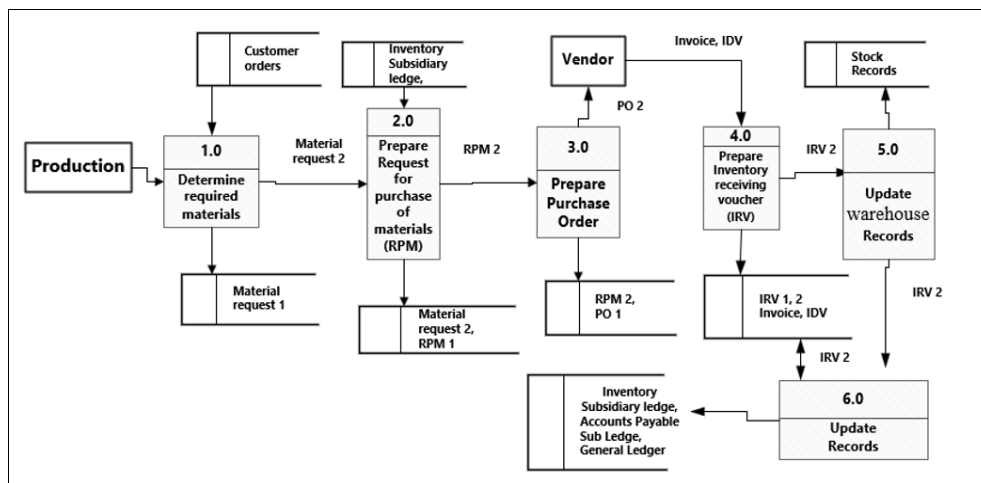


Fig 4: DFD for Manual Purchase System at Hong Ky Co., Ltd

Vietmax Investment And Development Joint Stock Company (Vietmax) is a medium-sized enterprise but has not yet applied computer software in the purchase cycle. The purchasing process is carried out through several departments:

- **Production Department:** Daily, based on production needs, the production department determines the amount of materials needed to fulfill customer orders. The material request form is prepared by the production department and sent to the inventory accounting department.
- **Inventory Control:** Upon receipt of the material request form from the production department, the inventory detail accounting department conducts an inspection of raw materials in stock with production needs. For materials in the warehouse that are no longer available to meet production needs, the detailed inventory accounting department summarizes and makes a request form for purchasing materials and sends it to the sales department.
- **Sales Department:** Based on the demand for raw materials, sales staff will contact suppliers, obtain quotations, and sign contracts with suppliers with purchase orders. The purchase order is divided into two rows, with one link given to the supplier.

- **Inventory Control:** When the supplier sends the goods with invoices and release slips, the inventory detail accounting department makes a two-link warehouse entry slip and sends the warehouse receipt to the warehouse department.
- **Warehouse department:** The warehouse department reconciles goods with invoices, receipts, and receipts. After signing the warehouse entry slip, the warehouse book is recorded, and then the warehouse entry slip is given to the detailed inventory accountant. A warehouse slip is delivered to the seller.
- **Inventory Control:** Upon receipt of the warehouse receipt, the detailed inventory accountant writes in the detailed book each type of material. Then send the set of documents including invoices, warehouse receipts, purchase orders, and warehouse receipts to the general accounting department.
- **General Ledger:** The general accounting department that receives the set of documents will conduct general bookkeeping and send the set of documents to the debt accounting department.
- **Accounts Payable:** The debt accounting department gets the documents, notes the facts payable to the vendor, and saves them.

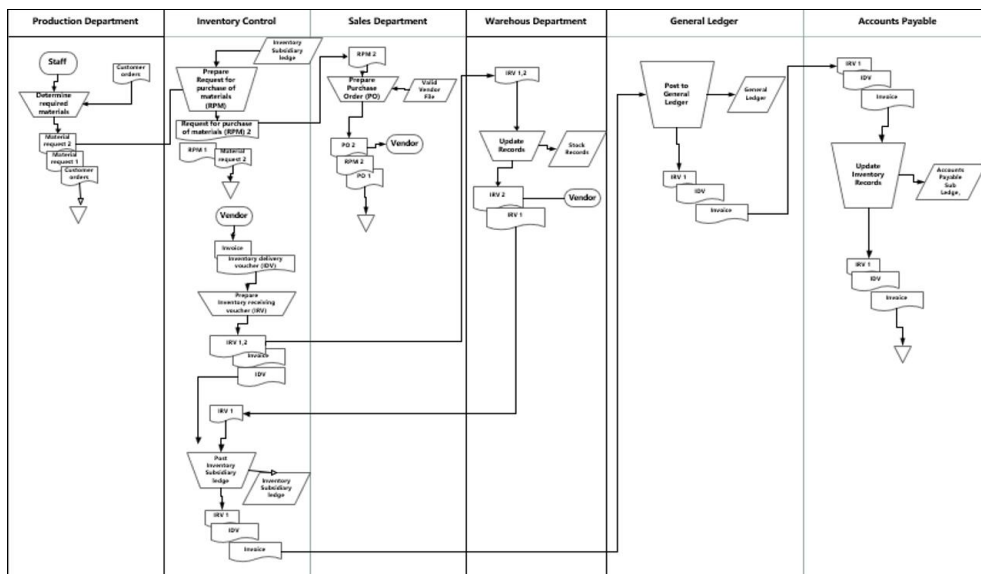


Fig 5: DF for Manual Purchase System at Vietmax IAD., JSC

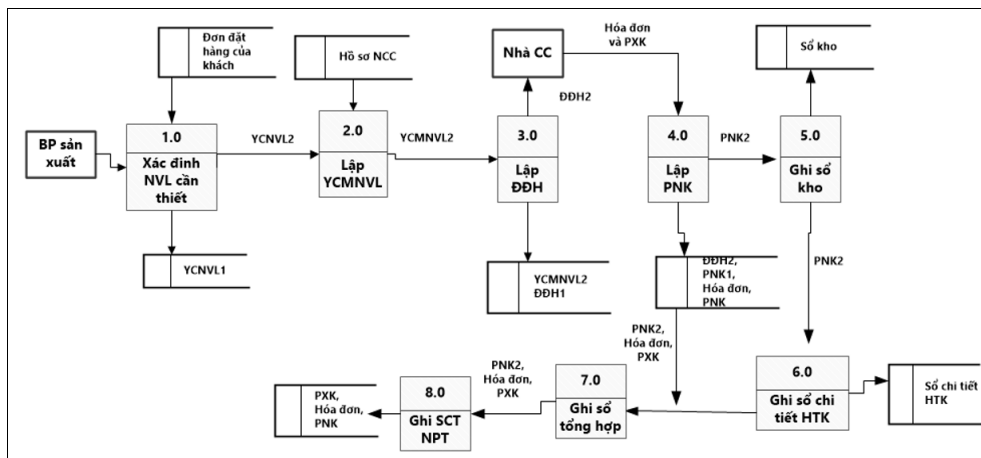


Fig 6: DFD for Manual Purchase System at Vietmax IAD., JSC

The manual purchasing cycle at Vietmax is represented by the data flow diagram in Fig 6 as follows:

Through a survey of the handmade purchasing process at typical printing companies, the authors found that companies have the following advantages:

- *About supervision:* Printing companies have supervised items in warehouses, particularly while receiving supplies. Surveillance cameras are installed in all production areas and doorways of businesses to monitor for any unusual activity.
- *About access control:* Companies all have access control activities. Companies have security measures in place at the gate to prevent unauthorized access. Only those who are on duty are permitted to access the company. The company's computer system is located in a private office area. Only office workers have access to computer systems. Computers at the company are set with the passwords of users directly.
- *Accounting records:* Accounting books are fully implemented by regulations. The documents used by printing companies ensure that they reflect economic operations arising from regulations. The accounting book system is implemented in the applicable unit's right form of accounting, assuring systematic recording of operations in the accounting books and providing a reliable basis for the generation of accounting reports to offer information to users.
- *About independent verification:* Independent verification activities are well done at the printing company in Hanoi. Companies have divided departments, each department performs specific work, and the departments are delegated, and decentralized, so independent verification activities are carried out between departments are obvious.
- At the surveyed companies, accounting information systems in the purchase and payment cycle provided information on purchase and payment activities, asset protection, and fraud prevention, but there are still some disadvantages to improve.
- *About segregation of duties:* In printing enterprises in Hanoi, task division activities are not guaranteed. Failure to divide incompatible activities among separate individuals loses independent departmental verifications, such as no reconciliation between general and detailed accounting, cash, and cashier accounting, and inventory and warehouse accounting.
- *Concerning access control activities:* At Hong Ky Co., Ltd., inventory access control activities have not been well implemented. Currently, the company does not have a separate inventory area, there is no separate locked door system with a production area. Purchased materials are stacked in a workshop corner without walls or doors to separate them from the production area. As a result, non-mission objects are easily accessible in this location, creating a risk to the preservation of inventory quality and quantity, especially since the company's inventory is perishable and easily stolen paper.
- *About documents at the stage of receiving goods:* At the survey companies, at the time of receiving the purchased goods, the consignee and storekeeper both receive a warehouse receipt with full information about the item name, quantity, and unit price. Therefore, it can lead to the phenomenon that the consignee does not

count the types of goods received, but based on the information on the warehouse receipt immediately records the actual quantity received. This leads to risks to the company's inventory. The risk is that the actual quantity or type of goods received does not match the warehouse receipt, thereby harming the company.

5. Solution

At printing enterprises in Hanoi, the accounting information system in the manual purchase cycle has provided information on purchasing activities, asset protection, and fraud prevention. However, some solutions need to be implemented to improve the current system:

Segregation of duties: Businesses have to perform an incompatible task division because incompatible tasks assigned to an individual can easily lead to fraudulent acts, theft of company assets, and accounting book repair. Specifically, enterprises need to separate the person performing detailed accounting work from the general accountant, accounting for inventory details from the storekeeper.

About the operation of controlling access to the assets of the enterprise: Access control includes access to a company's physical assets and access to the company's documents, books, and accounting reports. The company's physical assets in the purchase cycle are paper, paint... For inventory, enterprises need to have their warehouse, with warehouse door locks, only responsible people can enter the company's warehouse. Warehouse access control helps to avoid theft while ensuring the quality of goods and avoiding fire and explosions. Since the company's inventory is mainly paper and paint, quality and explosion-proof preservation are important.

About documents at the stage of receiving goods: At the survey companies, at the time of receiving the purchased goods, the consignee and storekeeper both receive a warehouse receipt with full information about the item name, quantity, and unit price. Therefore, it can lead to the phenomenon of unrealistic consignees tallying the types of goods received. Printing companies must utilize blank inventory slips supplied to consignees. The warehouse receipt is empty with no information about the quantity of goods. Therefore, the consignee must practically count, check the quantity and quality of each type of goods received, and fill in the warehouse receipt form.

6. Conclusion

The article has provided a theoretical basis, the current situation, and solutions to improve the accounting information system in the manual purchase cycle of printing enterprises in Hanoi. The accounting information system offers information about the unit's activities; nevertheless, it is important to develop an accounting information system in conjunction with the construction of an internal control system to ensure timely and effective information provision. At the same time, printing enterprises need to innovate computer software systems in enterprises, apply accounting software, purchasing software, and business management software to enhance the operational efficiency of enterprises, save costs, and meet the needs of production and business activities of printing enterprises in Hanoi.

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