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Continuous auditing: Developing automated audit systems for fraud and error detections

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A B S T R A C T

Indonesian Institute of Certified Public Accountants, American Institute of Certified Public Accountants and the Canadian Institute of Chartered Accountants(SAS 99 sec 110, par 2) establishes auditors' responsibility to plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether caused by error or fraud to plan and perform audits to provide a reasonable assurance that the audited financial statements are free of material fraud. This study proposed the development of Automated Audit System model to assist auditors in bridging them to the challenges in detecting fraud. This approach firstly provides a framework to have better understanding about the business process and data structures of information systems which is required in establishing an effective audit program. These ingredients are mapped in the audit process, including audit objectives, internal control and audit rules by using the Use-Case Diagram, Data Flow Diagram and Entity Relationship Diagram. Second, this study employs Benford's Law and Automatic Transaction Verification for the detection of anomalies and irregularities to design the framework. It also presents a systematic case study of actual continuous auditing in department stores that using ERP systems. It is expected to detect frauds and errors. It proves that Continuous Audit and Benford Law can establish strong framework in Automated Audit Systems for Fraud Detections and finally provide a big contribution to internal control and company policies.

A B S T R A K

Indonesian Institute of Certified Public Accountants, American Institute of Certified Public Accountants and the Canadian Institute of Chartered Accountants(SAS 99 sec 110, par 2) menetapkan tanggung jawab auditor, yaitu merencanakan dan melaksanakan audit untuk meyakinkan bahwa laporan keuangan bebas dari salah saji materi, yang disebabkan oleh kekeliruan maupun kecurangan dalam merencanakan dan melaksanakan audit yang bebas dari kecurangan. Penelitian ini mengusulkan pengembangan model Automated Audit System untuk auditor dalam mengatasi kecurangan. Pertama, pendekatan ini menyediakan kerangka kerja untuk memiliki pemahaman yang lebih baik tentang proses bisnis dan struktur data sistem informasi yang dibutuhkan dalam membangun sebuah program audit yang efektif. Semua aspek ini dipetakan dalam proses audit, termasuk tujuan audit, pengendalian internal, dan aturan pemeriksaan dengan menggunakan Use-Case Diagram, Data Flow Diagram, dan Entity Relationship Diagram. Kedua, penelitian ini menggunakan Benford's Law and Automatic Transaction Verification untuk mendeteksi anomali dan penyimpangan untuk rancangannya. Di sini juga disajikan sebuah studi kasus yang sistematis dari audit kontinu di department store yang menggunakan sistem ERP. Ini diharapkan dapat mendeteksi penipuan dan kesalahan. Ini membuktikan bahwa Continuous Audit and Benford Law dapat membangun kerangka yang kuat dalam Automated Audit Systems untuk deteksi kecurangan dan akhirnya memberikan kontribusi yang besar terhadap pengendalian internal dan kebijakan perusahaan.

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1. INTRODUCTION

Traditional audit has been obsolete so that there are three facts that show or at least support it. First, that we have entered the era of technology where every aspect of life has been dominated by technology and even harder to find the aspects of life that do not have the technology. Business has also experienced a fundamental transformation into the digital age (Majdalawieh & Zaghloul 2008, Vasarhelyi & Greenstein 2003). Second, now, almost all the transactions handled by the technology and even most transactions done automatically without involving humans as well as the data storage and documents themselves have been made in electronic forms (Rezaee et al. 2000, Zhao and Yen 2004). The third, the Enterprise Resource Planning (ERP) has been widely used (Prouty 2011) so the activity, and the data become large and complex as well as scattered everywhere. All these facts give hard pressure on the traditional audit existence that relied solely on manual.

Fraud trend analysis conducted by the UK's Fraud Prevention Service from 2007 to 2011, shows a significant increase in amount of 27.84 % (CIFAS 2011). Surely, this will give greater emphasis to the auditors. Enron, WorldCom, and other scandals make regulators parties find a way to suppress fraud. AICPA in SAS 99 (2002), the Indonesian Institute of Certified Public Accountants (2011) in Auditing Standards Section 110 emphasizes the need for responsibility of auditors in minimizing fraud. Aware of the limitations of traditional audit in dealing with such pressures, then the Panel on Audit Effectiveness (2000, p.172) points out:

> "The challenge for the auditing profession will be to develop new approaches to auditing to meet the demands for any new information and to adapt to changes in the accounting model. These new approaches may include some form of continuous auditing and require new tools and skills, with greater emphasis on the use of technology-driven analytical and diagnostic procedures"

The need of high-quality audits, coupled with an increasingly large electronic all data which can be geographically dispersed and does not have the audit trails, followed by increasing fraud makes the traditional audit hard to achieve audit quality desired. The limited resources of human and funds make conventional methods are not able to provide answers to the audit requirements of the Real Time, Scope and Lack of Resources in detecting fraud and errors (Vasarhelyi & Greenstein (2003), Rezaee et al. (2000)).

This study focuses on the development of a model of Automated Audit System that can bridge the above challenges to be faced by auditors in detecting fraud and errors. So the research question can be described as follows: 1. How to establish a conceptual model to bridge the semantic gap, which occurs between the auditors to audit the environment to form an audit rule? How to build a model of Automated Audit System that can answer today are challenges in detecting fraud?

The study tries to improve the effectiveness and efficiency of the audit. Through the Continuous Auditing, audit can be performed not only partial and real-time but with limited resources, also so that audit quality can be achieved. It also improves the quality of audit in producing financial statements that are free from material misstatement and fraud. This study is limited to the data or pattern that has been known by the auditor in detecting anomalies and or fraud. Yet, an unknown pattern that has never happened or that has not been mapped will not be detected. Therefore, research on Fuzzy Logic that enables the system to detect a new pattern that has not been found or mapped will be very useful further research.

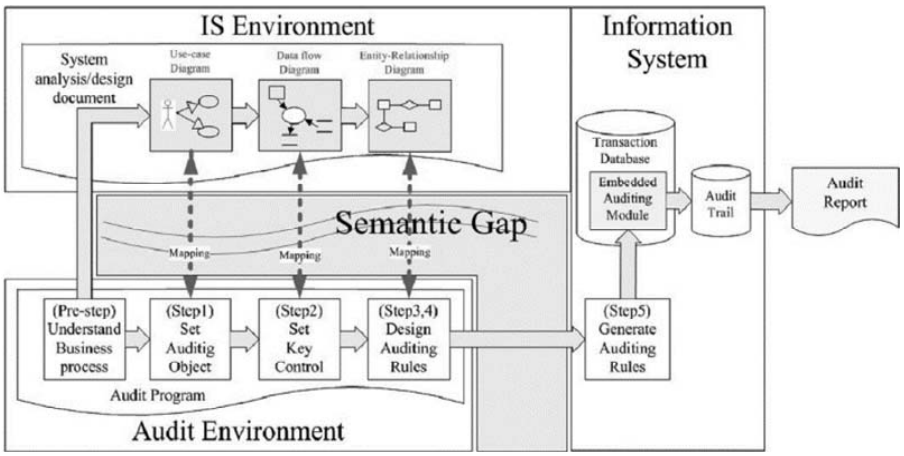
2. THEORETICAL FRAMEWORK AND HYPOTHESIS

Continuous Auditing

In Indonesian Institute of Certified Public Accountants, the Canadian Institute of Chartered Accountants (CICA) and the American Institute of Chartered Accountants (AICPA), Continuous Auditing, it is stated that "a methodology that enables independent auditors to provide written assurance on a subject matter using a series of auditors' reports issued simultaneously with, or a short period of time after, the occurrence of events underlying the subject matter" (CICA, 1999).

Kogan et al. (2010) argue that first research on Continuous Auditing was from Groomet and Murthy (1989), Vasarhelyi, and Halper (1991). They are trying to build Continuous Auditing architecture with a modern approach by incorporating embedded audit modules as well as control and supervision layers. The research on Continuous Auditing research have grown rapidly both from a technical aspects (Pathak 2005, Orman 2001, Kogan et al. 1999, Woodroof & Searcy 2001, Rezaee et al. 2002, Murthy 2004, Murthy and Groomer 2004), and economic aspect, and have a big impact on the world of practical auditing (Alles et al. (2002), Kneer (2003), Elliott (2002), Vasarhelyi (2002), Searcy et al. (2004)).

Figure 1
Systematic Continuous Auditing Procedures



Source: Li et al. (2007), p.5.

Table 1
Management Assertions for Each Category of Assertions (Arens et al. (2012))

Assertions About Classes of Transactions and Events	Assertions About Account Balances	Assertions About Presentation and Disclosure
Occurrence	Existence	Occurrence and rights and obligations
Completeness	Completeness	Completeness
Accuracy	Valuation and allocation	Accuracy and valuation
Classification		Classification and understandability
Cutoff		
	Rights and obligations	

It can be concluded that the Continuous Auditing definitely always improves itself through technology enhancement and adjustments to the needs of auditors in achieving audit objectives. This study focuses on the technical aspects of building a framework in Continuous Auditing; while other aspects of it can be investigated in future research.

Design of Continuous Auditing

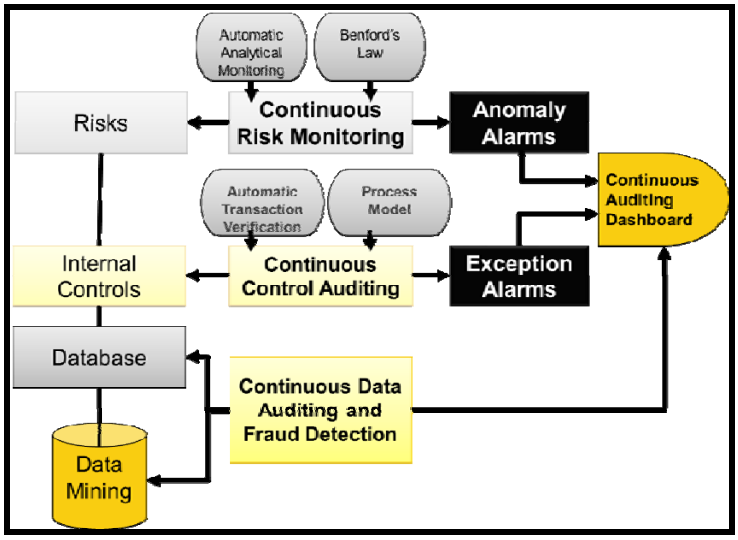
Arens et al. (2012) proposed a gradually step in the implementation of Continuous Auditing wherein test of controls and substantive test build as an integral part in the system. Systematic procedures required to produce an optimal Continuous Auditing. Designing Continuous Auditing starts from establishing audit program, business processes to be audited, the audit objectives, the key controls for each audit objective and necessary audit rules. The audit program was established with the help of systems analysts and conceptual models in conceptual models, the auditor can use the Use-Case Diagram to understand business processes and map out an audit plan into key business processes carefully and completely (Li et al. (2007), Olsen (2012)).

Use-Case Diagram (UCD) is used to map key business processes to the data through the Data Flow Diagram (DFD). Lastly, the DFD will identify data model and establish the rules-related audit through Entity Relationship Diagram (ERD). Last of all these rules will be compared with the operating system and software that are used in order to establish an audit module. In addition, audit modules that will assist auditors in monitoring critical processes and create audit reports. This systematic procedure can be drawn as shown in Figure 1.

In achieving audit adequacy, the auditor must understand about assertions (Arens et al. (2012)). International Auditing Standards (IAS) and U.S. Auditing Standards (GAAS) divide assertion into three categories: (1) Assertions about classes of transactions and events on the audited period, (2) assertions about the ending balance at the end of the period, (3) Assertions about presentation and disclosure. Basically, this assertion can be classified as shown in Table 1.

Having identified the relevant assertions, the auditor can develop audit objectives of each category of assertions. The purpose of the audit is always followed and closely related to the assertion. The reason why the auditor used the purpose of

Figure 2
Model of Continuous Auditing for Fraud and Error Detection



auditing not the assertion is to provide a framework for auditors to be able to collect sufficient relevant evidence and decide the proper evidence.

This study will be identifying the rules, business processes, information systems and the structure as well as the flow of data by mapping to get a complete and comprehensive picture. This study will also build a conceptual model to bridge the semantic gap so that it can be established required audit program that will eventually build the audit rules.

Fraud

SAS 99 and Indonesian public accountant professional standards 316 defines fraud as an intentional act that results in a material misstatement in the financial statements that is the subject of the audit. There are two types of misstatements that the auditor may consider as fraud, first, misstatements arising from fraudulent financial reporting and misappropriation of assets. Second, misstatements resulting from fraudulent financial reporting that can be either intentional misstatement or omission of a number or disclosures in financial statements designed to deceive financial statement users where the effect causes the financial statements are not presented in accordance with generally accepted accounting principles.

However misstatements arising from misappropriation of assets involve the theft of assets of an entity in which the impact of the theft causes the financial statements are not presented, in all material respects, in accordance with GAAP. This study will clarify whether an anomaly is included in the category of fraud or not in accordance with the applicable rules.

The Use of Benford's Law to Detect Fraud

SAS No. 99 has set the accounting profession to seek analytical tools and methods for detecting the fraud audit. In particular, SAS No. 99 (paragraph 28) reaffirmed for SAS 56 requires auditors to use analytical procedures at the planning stage of the audit in order to identify the existence of, and the transactions or unusual events (AICPA 2002).

Benford's law has been shown to be effective as analytical procedures in detecting fraud and errors (Durtschi et al. 2004, Albertch 2010, Diekmann and Jann 2010, Nigrini 2000). Benford's Law (Benford 1938) is a law that indicates a pattern of frequency of occurrence of a digit. If the numbers are not manipulated, the frequency of occurrence of the expected frequency would like Benford's law itself.

Thus, the Benford's law can be used as an analytical tool to detect anomalies which when investigated further anomalies will detect fraud. Benford's law will support effective audit quality and efficient in finding fraud as it can meet standardized by SAS 107, AU Sec 312 regarding risk analysis, SAS 111, AU Sec 350 of the sampling approach and SAS 99, AU Sec 316 regarding the requirements of fraud (Overhoff,2011). This study will examine whether there are anomalies in the data to be compared with the definition of fraud as has been clarified in the previous step.

Models of Automated Continuous Transaction Verification Environment (ACTVE)

This model facilitates the examination of transactions efficiently and in real time. This model significantly reduces examination time, especially at the time of data integrity checking (Spelt & Blasters 1997) and provides real-time confirmation of the

items identified by the auditor to examine the transaction and how to access both within the organization and outside with entities outside the organization (Dull et al. 2006).

Basically, this model will provide two advantages: first, it is to improve the timeliness and breadth of information that is audited and the second is the accuracy of the identification of issues that need to be audited. Implementation ACTVE on Continuous Auditing is based on the identification of business rules and policies in the transaction integrity inspection and validity of data and transactions.

Every transaction that is input or there will be checked against the rules and policies, including the audit rules that apply when there is a violation and will be marked as an exception. Any exception will trigger the alarm system Continuous Auditing, which will result in a report to the appropriate authorities. This study will examine whether there is an anomaly in the transaction or process to be compared with the definition of fraud as has been clarified in the previous step.

Continuous Auditing for Fraud Detection

Continuous Auditing models must be able to perform optimal detection to meet the real-time and efficient criteria. Data detection can be provided by Automatic Data Monitoring and Analytical as well as Benford's law, while transaction detection can be performed ACTVE so Continuous Auditing is to be formed as in Figure 2.

RESEARCH METHOD

This study uses a case study either descriptive or explanatory. The descriptive method explains the condition of the company in relation to establish a Continuous Auditing model, including the level of technology, databases and information systems. Explanatory method used to describe how the components of company like rules, company policies, and audit rules relating to Analytical Monitoring, Benford's Law and Automatic Transaction Verification intertwined in searching for the optimization of fraud detection.

Yin (2009) identified a case study is an empirical inquiry to investigate the facts in the context, especially when the boundaries between fact and context are not clearly visible. Then, it is stated that the unique strength of the case study is its ability to handle a variety of evidence (documents, questionnaire, interview and observation) so that it can be done construct development. Explanatory case studies examine the data in detail and tightly at both the surface and deep level to explain the phenomena in the data.

Based on such inspection, pattern matching can be used to investigate a particular phenomenon in the very complex case (McDonough and McDonough, (1997), Krathwohl (1993)). Although the document analysis and observation are the main source of information, this study also collected information from interviews, document analysis from business process mapping, Standard Operating Procedure (SOP), internal control, business rules, audit rules, a document that is used to structure the data.

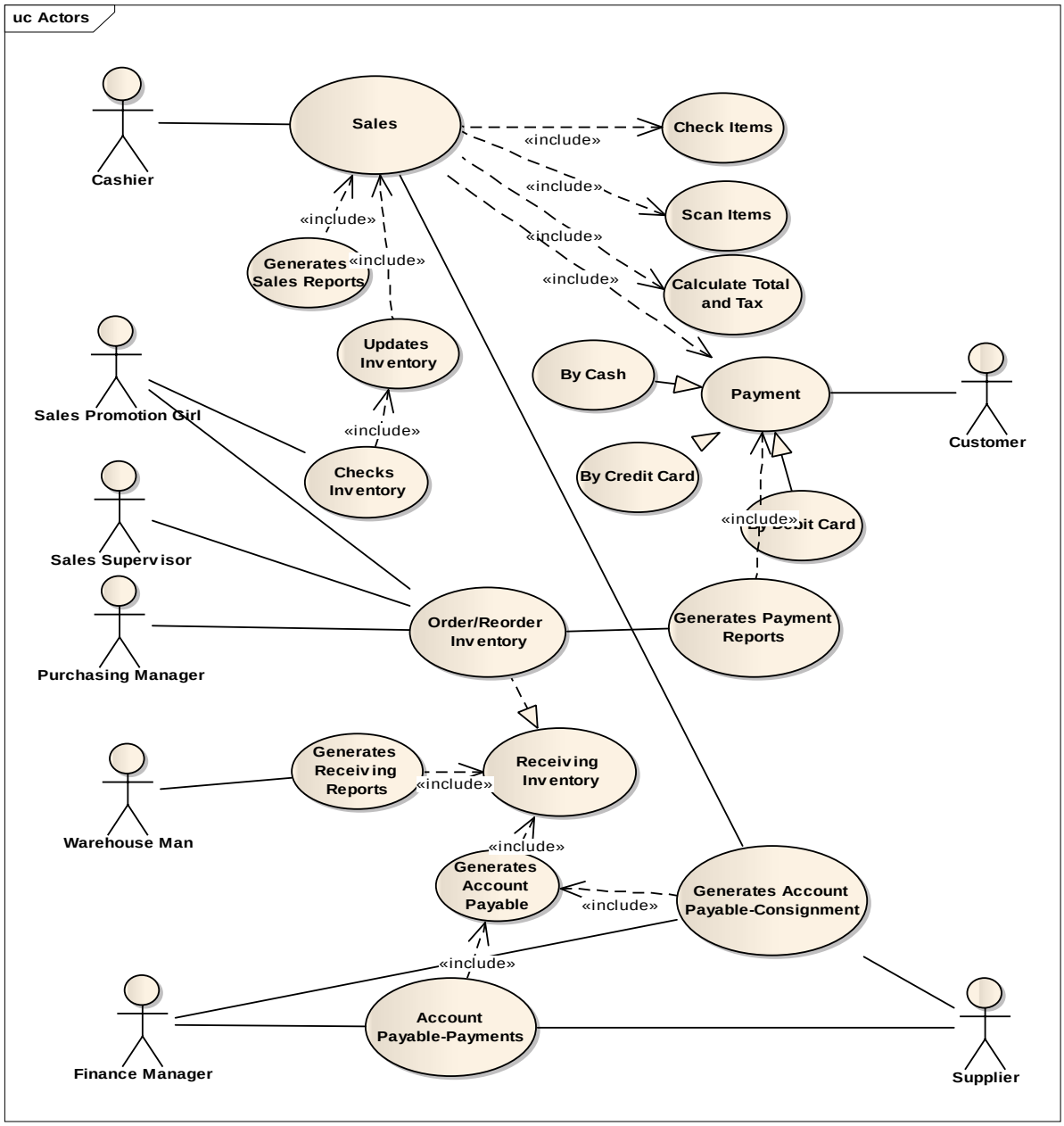
Observations made on the overall activity of the company begin taking delivery of materials to production to finished goods warehouse. Observations were also carried out to check whether documentation has been compiled in accordance with that occur in the field and to gather information that cannot be documented as informal information, which is common. Interviews were conducted with a semi-structured approach begins with a series of questions and expanded as needed. This study will examine the data by extracting data from the database and mapping to existing data tables. Chen and Leitch (1998) propose to use the Entity Relationship Diagram and Computer-Aided Software Engineering (CASE) as auditor facility in reviewing this case.

Source of Data

This study was conducted at Department Store KKK. A department store has been chosen because department stores grow so rapidly in Asia (Nielsen (2010)). Another reason, this company has constraints in human resource and budget that make the audit becoming difficult as well as having a great risk (Protivity, (2006)) and susceptible to fraud (Deloitte 2008, Shih et al. (2011), Daily (2012), Kroll, (2012)). A department store has been established since 1978, and employed 240 employees. The Department Store has the following specifications:

1. The building area of about 9,000 m^2
2. Employees are divided into two shifts
3. Department (divided by-product class) 127 unit
4. Having 21 Cashiers
5. Data processing has been using the integrated software with the Microsoft SQL Server database.
6. The sales data in 2011 around Rp. 292.000.000.000, 1.962.789 invoice with detailed transaction records of 3.927.121 records
7. Data purchases in 2011 was as much as 10.879 invoice with transaction detail records: 125.283 records

Figure 3
Use Case Diagram



4. DATA ANALYSIS AND DISCUSSION

Business Process

In performing an audit, auditor must understand the business processes in order to create an effective audit program. The auditor should also examine the rules, policies and the environment. In general, the systems analyst will use a use case model, to perform requirements analysis, process models to map business processes and data models to map database (Li et al. (2007)).

Use Case

Use Case for Department Store-KKK can be described as in Figure 3. Basically, the cashier will make sales and do the acceptance of money from customers. Acceptance of this money will be in cash, debit card or credit card. Sales inputted by cashier will update the inventory file and sales file. The inventory file will be monitored by the Sales Promotion Girl of each department to determine the order to the supplier.

Before the order to the supplier, orders must be authorized by the Supervisor and the Purchase. When a supplier sent the goods, warehouse will receive them and at this point the inventory file will be updated. Account Payable file will be updated when the item sold because the entire sale is consignment.

Figure 4
DFD-Purchase

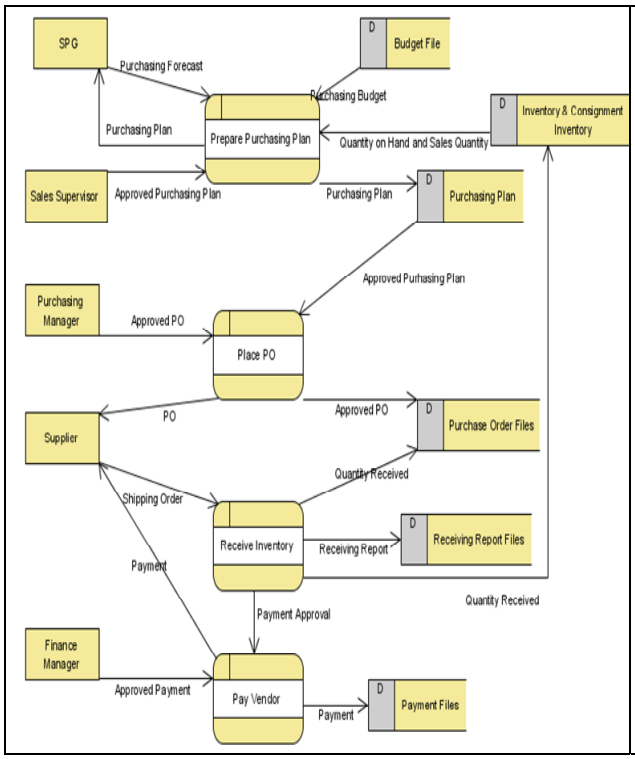
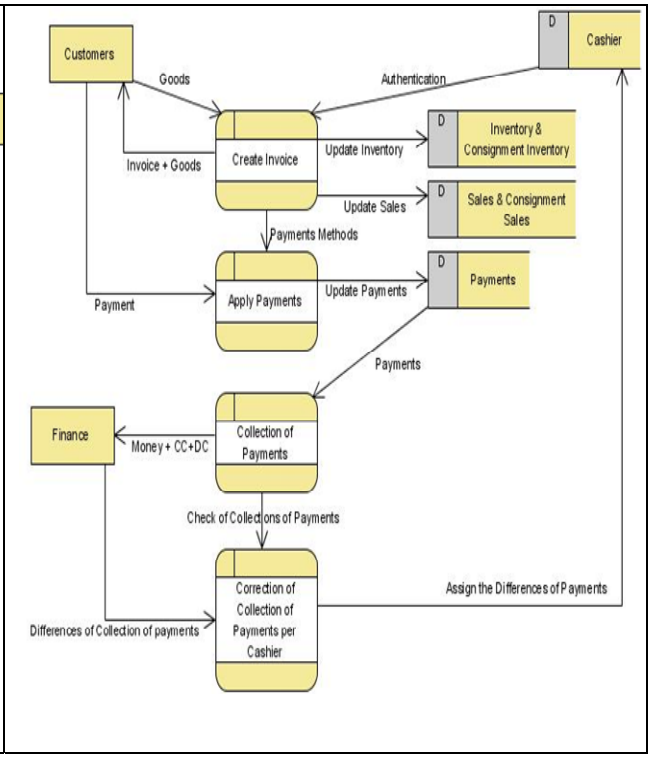


Figure 5
DFD-Sales



Data Flow Diagram

Use Case Model Diagram illustrates how a system interacts and how the system responds so this model is treated as a "Black Box" (Li et al. (2007)). And To be able to explain in detail to establish an audit program, Data Flow Diagram is the right tool to use (Whitten (2005)). Use Case diagram above (Figure 3) can basically be divided into two processes: (1) the purchase process and, (2) sales process. So from this use case can be drawn two DFD. DFD-Purchase can be seen in Figure 4 and DFD-Sales can be seen in Figure 5.

Entity Relationship Diagram (ERD)

To be able to perform effectively continuous audit, the auditor needs to perform the mapping of the database and the most effective methods used (Whitten, 2005) is the Entity Relationship Diagram. Entity Relationship Diagram gives a clear picture of the fields contained in the table contained in the database at the same time the relation. By looking at the field and the relationship of an auditor is able to make an effective audit program. ERD's department store purchase system it can be seen in Figure 6 and ERD sale it can be seen in Figure 7.

Audit Program

From the DFD, ERD and the audit assertion can be established an effective audit program. Each process in the DFD reflects the activity that has a risk and required necessary control and audit objects to secure it.

Audit Program and Audit Findings-Purchase

In DFD-Purchase, there are four main processes: (1) prepare the purchasing plan, (2) place the Purchase Order (PO), (3) Receive Inventory, (4) Pay Vendor (see Table 2 – 5 in Appendices). Therefore, the audit program will be adjusted to the process, and continuous auditing can be performed. Findings of continuous auditing will be compared to the traditional audit findings so can determine the effective and efficient of continuous auditing.

Audit Program and Audit Findings-Sales

In DFD-Sales, there are four main processes: (1) create invoice, (2) apply payment, (3) collection of sales, and (4) correction of sales receipt per Cashier (see Table 6 – 9 in Appendices). So the audit program will be adjusted to the process, and continuous auditing can be performed. Findings of continuous auditing will be compared to the traditional audit findings so can determine the effective and efficient of continuous auditing.

Implementation of continuous audit increases the effectiveness and efficiency of audit. That increase 8.222 findings that cannot be found by traditional audit or there is an increase of 249% in find-

Figure 6
ERD Purchase

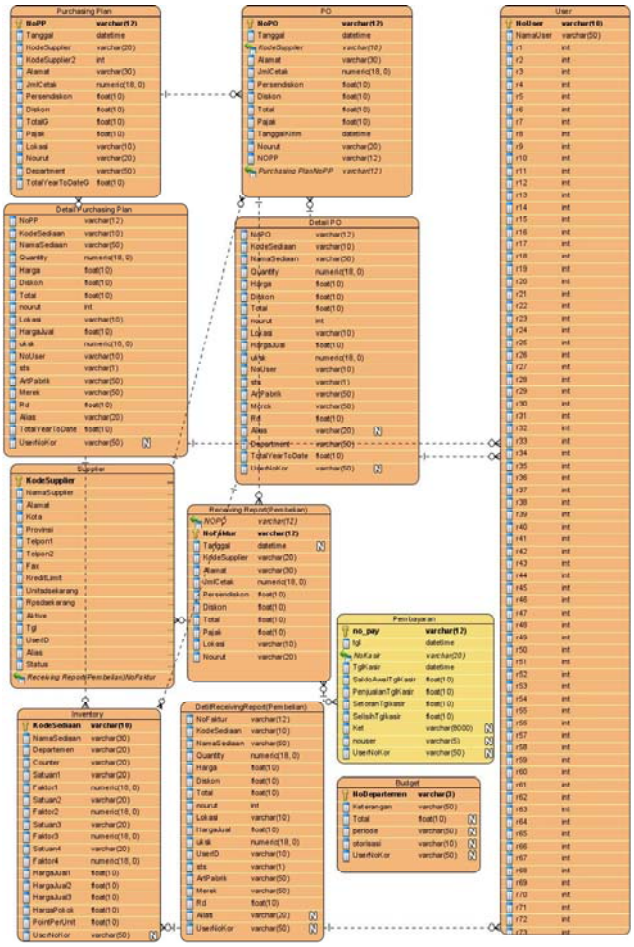
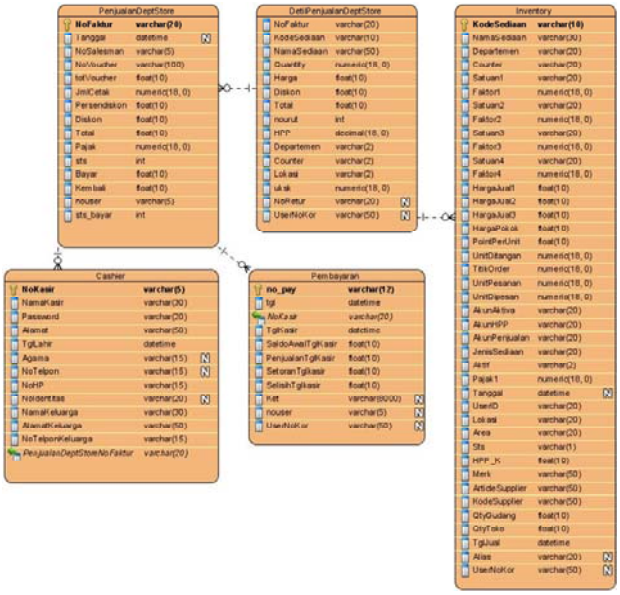


Figure 7
Sales ERD



ings. The largest increase findings occurred in the create invoice, 2.392 findings. After thorough investigation, the cause of the large difference is mainly due to the number of COGS is zero or null caused by calculation or weakness of the software used as well as negligence of employees. While the largest increase in percentage occurred in the process of prepare purchasing plan, 1334% due to the late of making purchasing plan. After doing the investigation, it is known to cause of the delay is employee's indiscipline.

Traditional audit never touches the user authorization of transactions (Table 10) although this will put the company to the high risk. From the investigation founded that the main problems in authorization caused by the weakness of the software used that allow delete the user even still has the transactions.

Benford Law

Benford's Law - Purchasing

Putting Benford Law to purchase on the digits 1 shows the results as in Figure 8. Examination showed normality except the digit 2 is slightly higher so happened to nine digits. Check 2 digits of Benford is shown in figure 9 shows where the area is more abnormalities. And investigations on the above data indicate an error in the preparation department of 35, 12, 74, 14, 6 and 89. These errors are all mistake in inputting the price due to human error and lack of clarity in current prices. This error occurs in five suppliers are: K0060, V0014, D0034, D006, D0065.

Benford's Law – Vendor Payment

Putting Benford's Law to vendor payment on the digits 1 shows the results as in Figure 10. Examination of the data shows normalcy. And it is consistent with the results of Continuous Audit findings that show at least the vendor payment process. It is as mentioned above due to that supplier payment process is implemented and controlled by the owner.

Benford's Law – Sales

Putting Benford's Law on the sales data of digits 1 and digits 2 shows the results as in figure 11 and figure12. The examination was conducted at the numbers that are not normal and investigation shows that most errors occur in department 35 and

Table 10
Summary of Authorization Violation

No.	Process	Findings (records)		Difference (records)
		CA	MA	
1	Prepare Purchasing Plan(table 1)	124	0	124
2	Place Purchasing Order(table 2)	3	0	3
3	Receive Inventory(table 3)	5	0	5
4	Pay Vendor(table 4)	0	0	0
Total Findings - Purchase		132	0	132
5	Create Invoice(table 5)	543	0	543
6	Apply Payments(table 6)	0	0	0
7	Collection of Payments & Correction of Collection of Payment per Cashier(table 7)	274	0	274
Total Findings - Sales		817	0	817
Total Findings		949	0	949

Figure 8
Benford Law 1 digit – Purchase

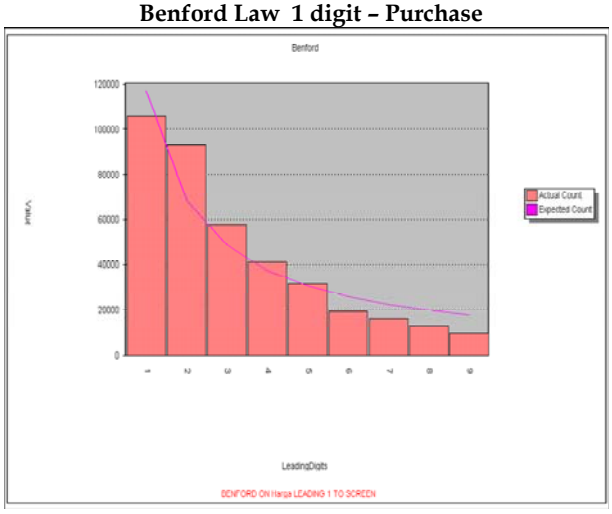


Figure 9
Benford Law 2 digit – Purchase

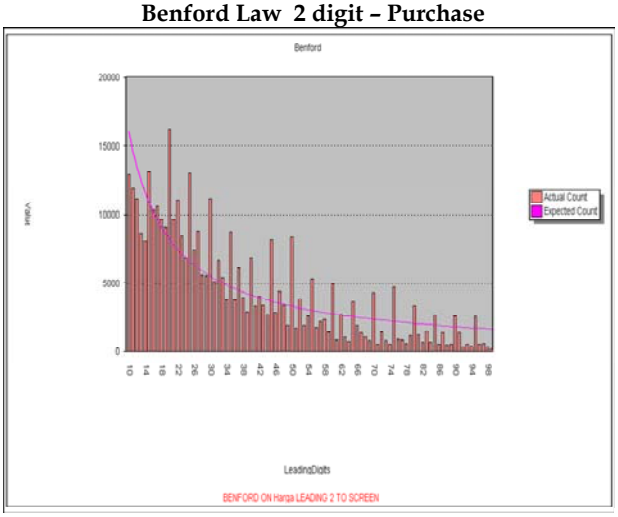
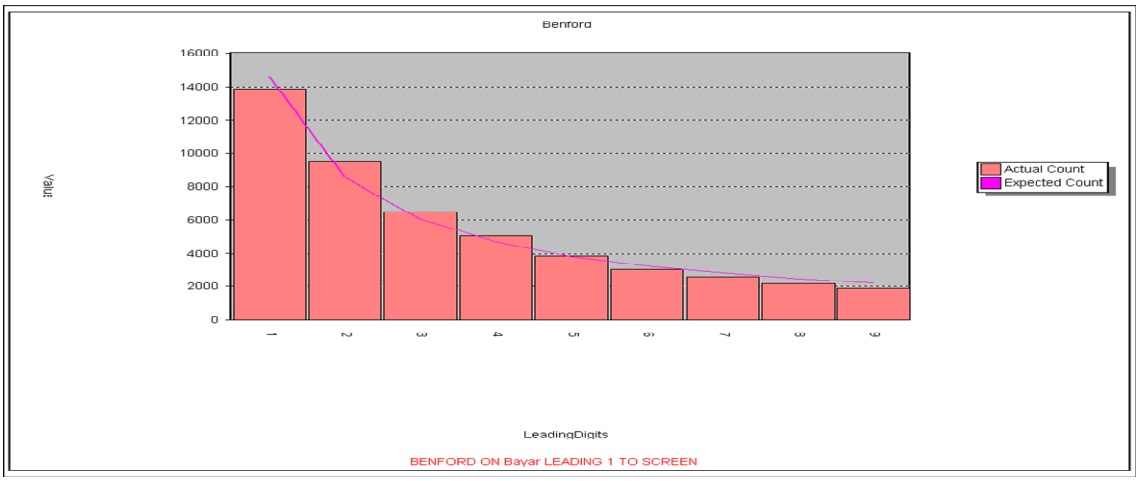


Figure 10
Benford Law 1 digit – Vendor Payment



the error is caused by inputting the incorrect selling price of the 14 inventories.

Continuous Auditing and Benford Analysis

The results of the Continuous Audit and Analysis Benford coupled to see if there are similar findings. Data analysis can be described as the Venn diagram as in Figure 13.

Comparing CA and Benford analysis needed to find the same findings found by both methods, 469 findings. So CA itself can find 11.048 and Benford's analysis contributes 834 findings that cannot be

Figure 11
Benford Law 1 digit – Sales

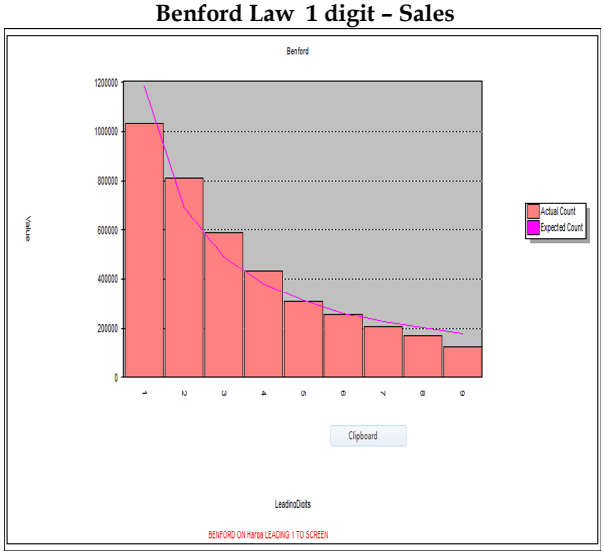


Figure 12
Benford Law 1 digit – Sale

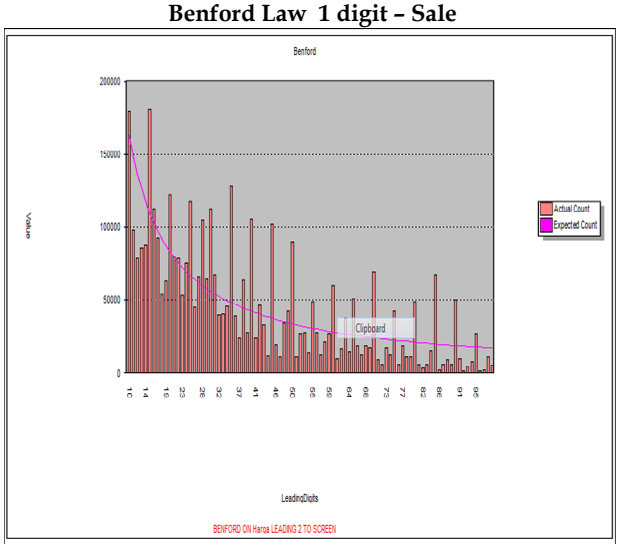
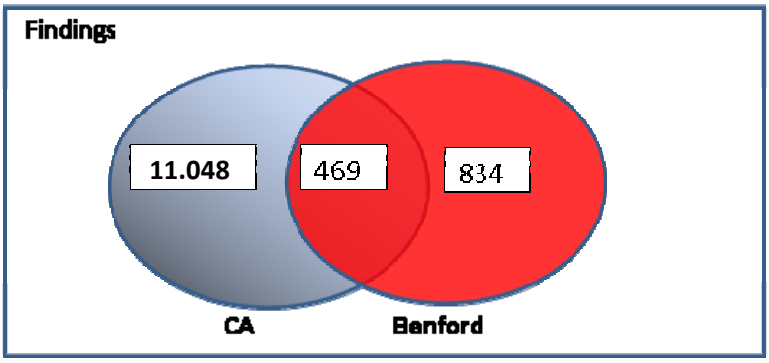


Figure 13
Venn diagram: Continuous Auditing and Benford Analysis



examined by continuous auditing. The investigation explains that the findings nominated by errors from human errors in inputting the data. So that coupled the continuous auditing and Benford's analysis will strengthen the framework of audit in achieving the quality of audit in fulfill the real time, scope and resource constraint.

5. CONCLUSION, IMPLICATION, SUGGESTION AND LIMITATIONS

Traditional Audit has faced enormous challenges when dealing with technology. In that case, communication speed, the amount of data, electronic storage media, as well as the complexity of the business activity lead the conventional audit not easily to achieve the desired quality of the audit. Further, it is exacerbated by the demands of real-time, broad scope and limited resources lead to a traditional audit judged to be obsolete. Continuous auditing try to assist auditors in facing the above challenges, especially in finding errors and fraud.

The design of continuous auditing begins with mapping business processes. The use case diagram is a right tool to map the business processes within a unit. It can describe the processes more detail as well as the relationships among the elements in a business. By using the use case, the DFD can be established so the data flow from one element to another can be identified deeply. Continuous Auditing will be related to the database then ERD can be a best tool to map the data structure. With mapping throughout the business, audit program, which is the machine of continuous auditing, will be identified, and continuous auditing framework can be optimized.

With the implementation of Continuous Audit, it can contribute 11.517 findings comprising 4.650 findings on the process of buying and 6.887 findings in selling process. Continuous Audit gives additional findings that cannot be found by the internal audit team using traditional audit is equal to 8.222 findings, and these findings are very significant. Even the user authorization process, which is not audited by the internal audit team, Continuous Audit, donated 949 findings, where this contribution is very important contribution since this risk is categorized to extremely highly risk for the com-

pany. This proves CA will make an audit more efficient and more effective.

Application of Benford analysis has made an audit more effective. This is proven by the discovery of 834 findings that cannot be pointed out with Continuous Audit and shows 469. It was found also that support or strengthen the findings of the continuous audit. This proves strongly that coupled continuous audit with Benford analysis will make an audit more efficient and more effective.

Further research can be done by applying Fuzzy Logic in Continuous Auditing so fraud patterns and anomalies that are not defined or identified by the auditor will be able to be detected. Thus, it will provide protection and detection more accurate for the auditor.

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APPENDICES

Table 2
Audit Program and Findings-Prepare Purchasing Plan

Risk Purchasing Plan made by people who do not have authorization, exceeding budget and made late over a specified date

No.	Auditing Objects	Assertions	Key Control	Auditing Rules	Findings (Records)	
					CA	TA
1	Purchasing Plan must be made by authorized users	Occurrence	Check if the user exists in user file	<Nouser> in <UserName> exist in <User>	3	0
			Check if the user exists in user file for the past transactions	<Nouser> in <PurchasingPlan> exist in <User>	121	0
2	Purchasing Plan does not exceed budget	Allocation	Check whether the total dollars purchasing plan has exceeded a predetermined budget	<Total> in <Detail Purchasing Plan> add with <TotalYearToDate> in <Purchasing Plan> is greater than <Total> in <Budget>	342	56
			Check if there is a total of nominal of a purchasing plan has exceeded a predetermined budget and if exists check, whether there is an authorization.	If <Total> in <Detail Purchasing Plan> add with <TotalYearToDate> in <Deatil Purchasing Plan> is greater than <Total> in <Budget> check <otorisasi>	0	0
3	Purchasing Plan made late over a determined date	Occurrence	1. Check if there is purchasing plan made late over a determined date	<Date> in <Purchasing Plan> is not <Monday>	1321	57
			2. Check if there is purchasing plan made on Monday	Check < Date> in <Purchasing Plan> each <Department> is not Monday	31	0
4	All Purchasing Plan are recorded and no duplicate document number	Completeness	Check if all purchasing plan are recorded in Purchasing File	<NoPP> is sequence of <Purchasing Plan>	63	11
		Reliability	Check if there is duplicate Purchasing Plan number	Check Duplicate <NoPP> in <Purchasing Plan>	27	9

Table 3
Audit Program and Findings-Place Purchasing Order

Risk Purchasing Order made by people who do not have authorization, exceeding budget and made not appropriate with Purchasing Plan

No.	Auditing Objects	Assertions	Key Control	Auditing Rules	Findings (records)	
					CA	TA
1	Purchasing Order must be made by authorized users	Occurrence	Check if the user exists in user file	1. <Nouser> in <UserName> exist in <User>	1	0
			Check if the user exists in user file for the past transactions	2. <Nouser> in <DetailPO> exist in <User>	2	0
2	Purchasing Order does not exceed budget	Allocation	Check whether the total dollars purchasing plan has exceeded a predetermined budget	<Total> in <Purchasing Order> add with <TotalYearToDate> in <Detail Purchasing Order> is greater than <Total> in<Budget>	211	64
			Check if there is a total of nominal of a purchasing plan has exceeded a predetermined budget and if exists check, whether there is an authorization.	If <Total> in <Purchasing Order > add with <TotalYearToDate> in <Detail Purchasing Order> is greater than <Total> in <Budget> check <authorization>	2	2
3	Purchase Order is not appropriate with authorized purchasing plan	Occurrence	Check if there is purchasing order is not equal with authorized purchasing plan	<StockCode>, <Quantity>, <Price> in <Purchasing Order> is equal with <StockCode>, < Quantity >, <Price> in <Purchasing Plan>	921	127
4	All Purchasing Order are recorded and no duplicate document number	Completeness	Check if all purchasing order are recorded in Purchasing File	<NoPO> is sequence of <Purchasing Order>	256	34
		Reliability	Check if there is duplicate Purchasing order number	Check Duplicate <NoPO> in <Purchasing Order>	13	0

Table 4
Audit Program and Findings-Receive Inventory

Risk Receiving made by people who do not have authorization, exceeding budget and made not appropriate with Purchasing Order

No.	Auditing Objects	Assertions	Key Control	Auditing Rules	Temuan (records)	
					CA	TA
1	Receiving Report must be made by authorized users	Occurrence	Check if the user exists in user file	<Nouser> in <User-Name> exist in <User>	1	0
			Check if the user exists in user file for the past transactions	<Nouser> in <Receiving Report> exist in <User>	4	0
2	Receiving Report is not appropriate with authorized Purchase Order	Occurrence	Check if there is receiving report is not equal with authorized purchasing order	<StockCode>, <Quantity>, <Price> in <Purchasing Order> is equal with <StockCode>, <Quantity>, <Price> in <Purchasing Order>	26	0
3	Receiving Report made late over a determined date	Occurrence	Check if there is receiving report made over a determined date in Purchase Order	<Date> in <Receiving Report> is not greater than <DateSent> in <Purchase Order>	736	231
4	Inventory has value 0	Valuation	Check if there is inventory has 0 value	<PricePokok> in <Sediaan> is null or 0	121	0
5	All Receiving Report are recorded and no duplicate document number	Completeness	Check if all receiving report are recorded in Purchasing File	<InvNo> is sequence of <Receiving Report>	311	132
		Reliability	Check if there is duplicate receiving report number	Check Duplicate <InvNo> in <Receiving Report>	42	31

Table 5
Audit Program and Findings–Pay Vendor

Risk Payment to vendor more than the inventory sold or the inventory received

No.	Auditing Objects	Assertions	Key Control	Auditing Rules	Temuan (records)	
					CA	TA
1	Vendor Payment must be made by authorized users	Occurrence	Check if the user exists in user file	<Nouser> in <UserName> exist in <User>	0	0
			Check if the user exists in user file for the past transactions	<Nouser> in <Payable> exist in <User>	0	0
2	Payments to Vendors must be no larger than it should be paid	Accuracy, Right and Obligation, Classification, Cut off	Check whether there is a payment that greater than the total of proper Purchase Order which has been adjusted to the quantity of stocks received in Receiving Report	<Total> in <payable> is not greater than <Price> in <PO> X <Quantity> in <Receiving Report>	14	0
3	Payments to Consignment Vendors must be no larger than it should be paid	Accuracy, Right and Obligation, Classification, Cut off	Check whether there is a payment that greater than the total of proper Purchase Order which has been adjusted to the quantity of stocks in sales invoice	<Total> in <Payable> is not greater than <Price> in <PO> X <Quantity> in <Sales Detail> of<Consignment Supplier>	73	0
4	All payable are recorded and no duplicate document number	Completeness	Check if all payment are recorded in Payable File	<NoPay> is sequence of <Payable>	5	5
		Reliability	Check if there is duplicate payable number	Check Duplicate <NoPay> in <Payable>	3	3

Table 6
Audit Program and Findings-Create Invoice

Risk Invoice created by users who are not authorized and there are selling with unauthorized loss

No.	Auditing Objects	Assertions	Key Control	Auditing Rules	Temuan (records)	
					CA	TA
1	Invoice must be made by authorized users	Occurrence	Check if the user exists in user file	<NoKasir> in <UserName> exist in <User>	532	0
			Check if the user exists in user file for the past transactions	<Nouser> in < SalesDetail > exist in <User>	11	0
2	Every sales has a profit expect there is authorization	Valuation	Check if there is a lower selling Price than Cost of goods sold, if exist there is an authorization.	<Price> in <SalesDetail> is lower than <COGS> in <Inventory> and check <UserIDKor> in <Inventory> exist in <User1:PriceChang>	452	0
3	COGS equal to 0	Accuracy	Check if there are sales that have a zero or null HPP	<COGS> in <SalesDetail> is equal with 0	1023	0
4	All Invoice are recorded and no duplicate document number	Completeness	Check if all Invoice are recorded in Sales File	<InvNo> is sequence of <Sales>	784	475
			Check if there is duplicate Invoice number	Check Duplicate <InvNo > in <Sales>	189	124

Table 7
Audit Program and Findings-Customer Payment

Risk Customer payment received is not as it should be

No.	Auditing Objects	Assertions	Key Control	Auditing Rules	Temuan (records)	
					CA	TA
1	Payment must be equal with the invoice	Accuracy	Check if there is a payment that is not equal with the invoice	<Total> in <Payment> is not Equal with <Total> in <Sales>	162	0

Table 8
Audit Program and Findings-Collection of Payments & Correction of Collection of Payment per Cashier

Risk Cash Receipted from the sale over the tolerance Rp. 50,000 of the total sales made for each cashier.

No.	Auditing Objects	Assertions	Key Control	Auditing Rules	Temuan (records)	
					CA	TA
1	Collection of Payments must be made by authorized users	Occurrence	Check if the user exists in user file	<Nouser> in <UserName> exist in <User>	532	0
			Check if the user exists in user file for the past transactions	<Nouser> in <Pembayaran> exist in <User>	11	0
2	Cash Receipted from the sale over the tolerance Rp. 50,000 of the total sales made for each cashier.	Accuracy	Check if there is a cashier deposit that is not the same with cash register sales	<ExCash> in <Deposit> is not equal with (Rp. 50.000 + <SalesDateCashier>r> in <Deposit>)	2634	1934
3	Every cash excess has been inputted	Accuracy, Classification	Check if there is excess cash that has not been inputted cashier at the corrections	(Sum<total> in <Sales> each Cahier) - < SalesDateCashier > in < Deposit > is equal with <Total> in <CashierCorrection>	65	0
4	All collection of customer payments are recorded and no duplicate document number	Completeness	Check if all Invoice are recorded in Sales File	<NoDeposit> is sequence of <Deposit>	423	0
			Check if there is duplicate Invoice number	Check Duplicate <NoDeposit> in <Deposit>	49	0

Table 9
Findings Summary

No.	Process	Findings (records)		Difference (records)	Difference (%)
		CA	MA		
1	Prepare Purchasing Plan(table 1)	1908	133	1775	1334.5
2	Place Purchasing Order(table 2)	1406	227	1179	519.3
3	Receive Inventory(table 3)	1241	394	847	214.9
4	Pay Vendor(table 4)	95	8	87	1087.5
Total Findings - Purchase		4650	762	3888	510.24
5	Create Invoice(table 5)	2991	599	2392	399.33
6	Apply Payments(table 6)	162	0	162	N/A
7	Collection of Payments & Correction of Collection of Payment per Cashier(table 7)	3714	1934	1780	92.04
Total Findings - Sales		6887	2553	4334	169.76
Total Findings		11517	3295	8222	249.53