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Management System for IT Assets Using RCA Analysis

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ABSTRACT: Asset management is important for companies whose operations depend on assets. Managing IT assets, especially for companies that have implemented IT in their operational activities, requires good management to control and supervise so there is no loss of assets, and the ability to optimize the use of the assets themself. This research took the case of a food company, this company has branches and outlets throughout Indonesia. The problems found in this company are that there are no access restrictions to the asset request system, and unrecorded assets distribution so it is difficult to track the location of assets, the time required to provide information regarding the amount of assets is very long due to scattered sources. This research aims to improve control over the existence of assets, monitor the number of assets, and assist companies in minimizing errors in input requests or input data assets. The method used in the system analysis is the RCA method. This research produces an output in the form of an application that helps the company record and supervise the management of its IT Assets.

KEYWORDS *: IT assets, RCA, Management System*

I. INTRODUCTION

The role of information technology is very important for a company [1]. Why? Because to compete in the industry and achieve a competitive advantage, companies need the help of information technology in most of their operations. With the development of IT today, computers are not only used as a tool in processing data but can also be used as an information medium that can be accessed at any time. Seeing the huge benefits of computers in the business world, companies engaged in the food sector, especially in the IT department, use technology as a medium to support the company's operational activities [2]. Information Technology is based on what is needed such as infrastructure, hardware, and software, so that in its application supervision and control are needed. The IT department as a service provider in the field of Information Technology has the task of procurement, processing, and management of hardware and software in the company[3]. The development that occurs in the company and the increase in human resources, the need for hardware is increasing. This makes IT hardware in the company an important asset in supporting the company's operational activities. Assets have the meaning of everything that is tangible or intangible but has economic value and economic period to support the operational activities of agencies or organizations [4]. Every company certainly has assets, either in the form of goods, such as office equipment or production or facilities. Assets need to be identified, managed, and maintained properly in order to optimize their use. In this case, identifying, managing and maintaining assets is part of asset management. In a sense, asset management is an activity of planning, supervising, and organizing in using, repairing, maintaining buying, and eliminating physical assets to maximize services and reduce costs and risks in managing tangible and intangible assets, which are carried out in operational activities with or without technology [5]. In supporting the implementation of good asset management, an asset management information system is needed [6].

The asset management system is an inventory asset data collection system that is carried out integrated throughout the tu organization agencies to carry out orderly administration of management and data collection of goods[7]. The asset management system arranges asset data somewhat structured and structured so that it is easier to use [8]. Asset management systems have an important role in a company to produce high performance in providing services [9]. The company to know the assets, estimate the economic life of each item, and provide the nurse with assets regularly, in carried out by the asset management system [10].

This research will take the case of the application of information technology to one of the Fast Food companies in Indonesia. This company is a company that holds the franchise rights of restaurants in Indonesia as many as 750 stores, 9 regional offices and 1 head office. So far, the company has implemented a system that is only limited to recording asset request data, but this system does not include controlling the existence of assets because the asset data storage media is still spread to several different data sources and there is no centralized

asset database, which can make data in an organization managed accurately and on time [11], The system that is being implemented also does not have access control over the user who accesses the application, where the access control functions to secure data from users who do not have the right to access it [12]. This study discusses the process of requesting assets, distributing assets, borrowing assets, scanning with QR Codes, transaction approvals, and asset reports. The asset management system designed will use the QR Code labeling technique, where the QR Code can make it easier to find information about assets [13]. The use of QR Codes is effective because it is very helpful for users in terms of conducting asset inventory quickly and precisely, namely only through scanning the QR Code code that is pasted on each asset, then the user only enters the condition of the asset and the data can be directly submitted to the server for storage [14].

II. LITERATURE REVIEW

- *Asset Management System*

The asset management system is an integrated inventory asset data collection management information system for all agencies in order to carry out orderly administration of management and data collection of goods (1).

- *RCA Analysis*

Root Cause Analysis (RCA) is the process of analysis to define a problem, understand the transition mechanisms underlying a condition from an undesirable to a desired condition, and to identify the root cause of the problem so that it does not occur repeatedly using structured procedures (2).

- *QR Code*

QR Code is a two-dimensional symbol developed by Denso Wave 1994 with the main purpose as a symbol that can be easily interpreted by scanner tools. To creates Q R Code that can be generated or scanned on android-based devices using the ZXing (Zebra Crossing) extension
ZXing ("zebra cross") is an open-source, multiformat 1D/2D barcode image processing library implemented in Java, with ports for other languages. Zxing can be used to encode and decode barcodes for desktops and servers as well. For now the formats supported by ZXing are UPC-A and UPC-E, EAN-8 and EAN-13, Code 39, Code 128, QR Code, Data matrix, PDF417, ITF, RSS-14, RSS-Expanded.

Then with ZXing, the encoding result is converted into a QR Code. Users can store it on a device or make a printed form on paper media. To retrieve the data back, the user can use the decryption function on the application on the device for the stored data or use the camera scanner available on the device to scan the QR Code that is outside the device.

III. RESEARCH METHOD

Data collection in this study was carried out to obtain the information needed in this research process in the form of primary and secondary data. Data collection uses observation techniques, interviews and documents, in the fulfillment of research materials.

In the technique observation observe the asset request process on the *service desk* application, the process of inputting asset request data, the process of making request orders, the approval process of asset requests, the process of requesting asset lending, the process of asset service, the process of inputting goods in and out, and the process of distributing assets in the IT department. Then conduct interviews with asset managers, asset supervision, and asset department staff. Then the documents obtained are in the form of an IT request form, a good goods delivery form, a company profile, a DO (delivery order) form, a form for receiving goods from suppliers, and an order request form. The research process is carried out with a flow that is divided into 2 stages, namely the stages of system preparation and the stages of system development. It can be described as follows;

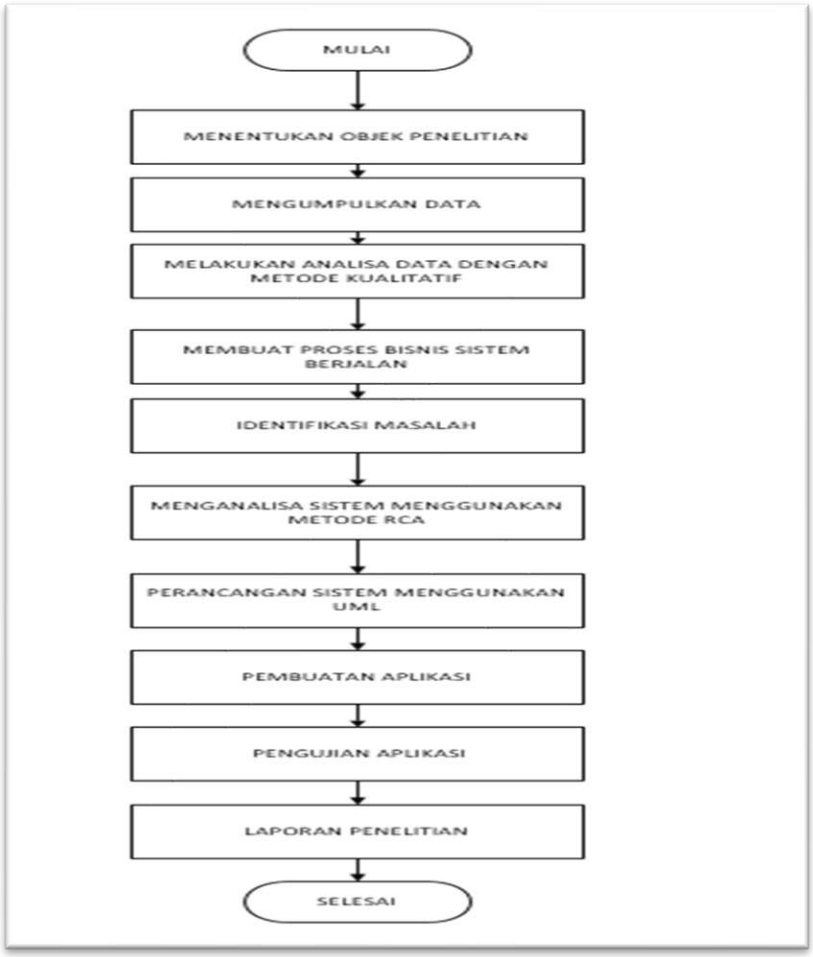

Figure 1. Stages of Research

this study conducted a system analysis using the RCA method, *Root Cause Analysis (RCA)*, considered the category of problems found in this case. Jing (2008) describes five popular methods for identifying the root cause of an unexpected event from simple to complex including Is/Is not comparative analysis, 5 Why methods, Fish Bone Diagram, Cause and effect matrix, and Root cause tree (3).

IV. RESULTS AND DISCUSSIONS

In system development in this study, it is determined to use the waterfall method which is divided into stages of analyzing needs, making system designs, implementing systems and conducting system testing.

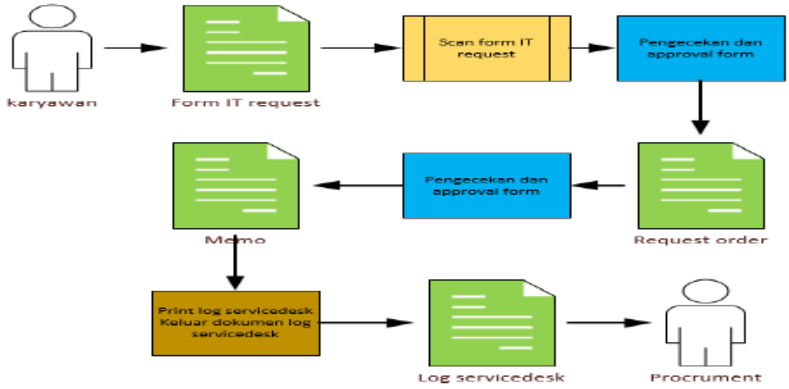

Figure 2. Asset Application Business Process Existing

The process of applying for assets is carried out by employees from all units through the Service Desk application. Then it will be processed by IT service and given validation. Requests that enter the application will automatically generate a ticket ID, where the ticket ID will be a parameter in submitting assets. Then IT Service

Desk will print the IT Request form to be given an ID ticket that was previously in the Service Desk application to be given to IT support to be taken to the head of the employee for checking and approval. The IT Request form that has been approved is then taken to the asset team to approve the asset manager. The administrative files that have been approved will then be given to the procurement division for the order process.

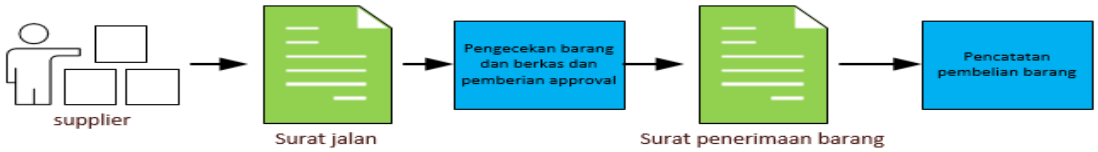

Figure 3. The Process of Receiving Assets from Suppliers from Business Process Existing

In the process of receiving assets from suppliers, it is carried out by IT Assets. IT Assets receive goods from suppliers and road letters. Then check the goods, whether the goods are in accordance with the order, if they are in accordance, validation will be given based on the RO that has been made before. Goods that have been received and validated by IT assets are inputted into a computer to be stored and printed a letter of receipt of goods. The Goods Acceptance Letter is given to the procrument department for confirmation that the goods have been received by the IT department.

Figure 4. The process of asset distribution.

In the process of distributing assets from the head office to branch offices and outlets throughout Indonesia, starting from *the Request Order* that has been submitted by employees, then physical checks of goods in the inventory section through visits or telephone calls are carried out. Existing goods will be further processed in the IT section of aset, and if the goods are not there, they will be submitted to the *procurement department.* The goods to be distributed are checked and approved by the IT Asset Manager and IT Support. Then the goods are distributed to the applicant unit then the employee as the applicant after receiving the goods will be asked to provide proof of receipt, namely a signature on the Goods Delivery Form. checking the goods and delivery forms of goods both that have been given by IT support, if the request is appropriate, the employee will input it into the servicedesk application, to change the status of the request to closed.

- Requirements Analysis

The system analysis method used to identify this research is the RCA (root cause analysis) method using cause and effect analysis, as for the problems that exist using the RCA framework are as follows:

Table 1. Root Causes and Effect Analysis

No	Problem	Cause and Effect	Solution
1	The IT Department has difficulty in finding asset data that has been distributed to employees	No logging and non-integrated systems	Made searching asset data using barcodes in searching for assets when assets have been distributed
2	There are doubel requests for the same asset with different tickets.	There is no notification of updates related to employee asset requests, making it difficult for employees to monitor asset requests.	An asset request form is created with validation of the ticket id, unit code and item id.
3	Thereis a problem when accessing the servicedesk application system, where the employee password used is a NIK so that all employees can enter.	The user and password log in to the servicedesk application using the employee's NIK, and cannot be reset the password.	Made Access right for each unit.

4	Difficulty in knowing the total assets owned by the company due to the spread of data locations	Because the same data is stored by different people, it causes the storage media to be different	Created an asset database
5	An error occurred in inputting data.	Too many tables are created that confuse employees who input data.	A data input form is created with the information as needed.

- System Design

In this study, the author used the help of UML (unified modeling language) visual communication tools in the form of *Usecase Diagrams*, *Activity Diagrams* and Sequence Diagrams to make system designs.

- Usecase Diagram

This study used usecase diagrams as a tool to design the required system processes. Based on figure 2, the Use Case Diagram of the asset management system of PT. Fast Food Indonesia consists of 4 actors, namely asset supervision, department staff, asset staff and asset managers. In addition, this design has 12 *use cases*, namely input master data assets, asset requests, asset loan applications, asset return requests, approvals, reports, asset return requests, entry asset records, outgoing asset records, asset distribution, asset loan recording and asset return recording.

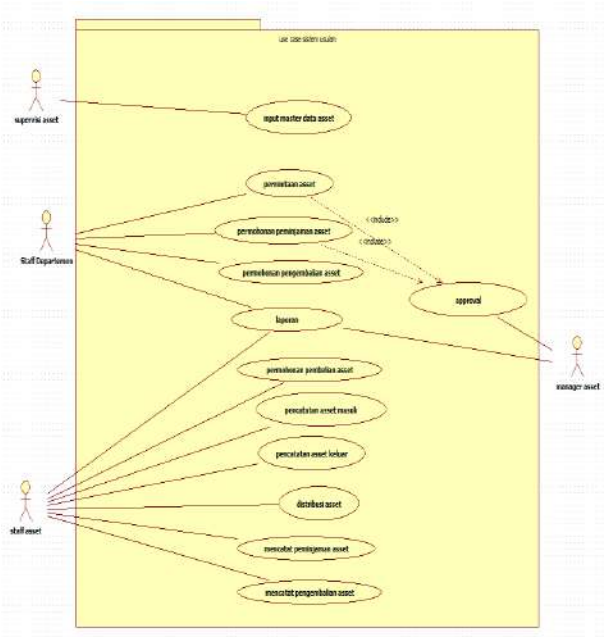

Figure 5. Usecase Diagram

- Implementation

This research produced an application where when the user successfully logs in will display a page as can be seen in figure 5, this page will display data on total assets and also *a pie chart* related to information on the number of assets based on product, unit, status and also asset data owned by the company. This application can also convert information related to an asset into the form of a QR Code which when this QR code is scanned will provide information in the form of an asset code, status, location, product name, brand and product model.

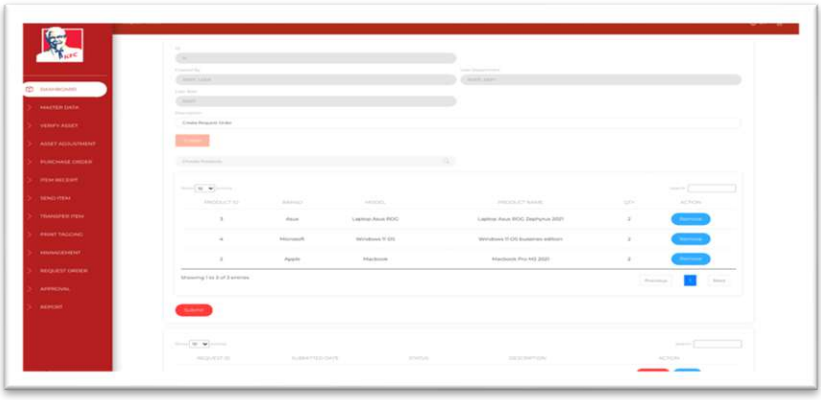

Figure 6. Asset Request Process View

The picture above is a page that will be accessed by users with department admin access rights. This form serves to submit asset requests, this form accepts input in the form of types and numbers of asset products requested, when this request form is submitted, the asset request will be forwarded to the approval process from the manager of the department concerned.

The picture above is the appearance of the approval page, this page can be accessed by a user with department manager access rights, and this page will display a list of asset requests made by the department admin. On this page, there is a function to approve and reject asset requests that managers can use.

The asset distribution page can be accessed by a user with access rights as an admin asset. On this page, the asset admin can select a request order that has received approval from the manager's department and then input the asset data to be distributed based on the list of products in each asset request.

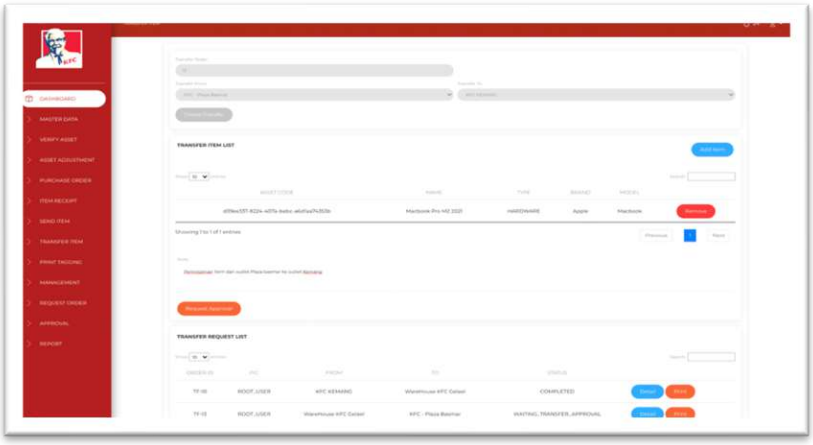

Figure 7. Display of Asset Lending Process

The asset lending page is a page that can be accessed by users with asset admin access rights. this page serves to submit mutation requests, on this page there are inputs of destination units and origin units and a list of assets that are in the original unit to be mutated to the destination unit.

The asset acceptance page is a page that can be accessed by users with asset admin access rights. this page serves to record incoming goods based on supplier data and PO (Purchase Order) numbers.

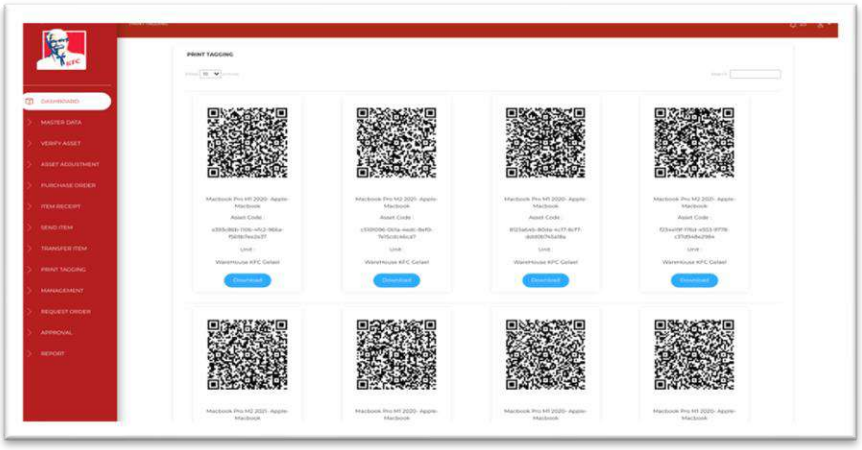

Figure 8. Qr Code Creation Process Display

The print tagging page is a page that serves to display and download a QR Code which is the result of conversion from asset data in the system.

V. CONCLUSION

Based on research conducted on existing problems, namely, there is no control and supervisory function of IT assets reporting asset data that is to be searched, it can be concluded:

1. Asset data along with the location of assets will be recorded by the system so that the company will be able to find out the total number of assets or the number of assets per allocation.
2. The recorded asset data will be converted into a QR code where this QR code contains information on the assset code, product type and location unit so that it can facilitate the process of checking assets.
3. The system can record the results of the stock-taking so that later the asset data will be in sync with the presence of assets in the field.
4. The status and progress for each asset request from a department can be seen.
5. Incoming asset data based on the PO (purchase order) number will be recorded by the system so that the asset history will be clearly visible.
6. User access rights can be controlled by the system and authentication for each user will be more secure with the change password feature.
7. The process of granting approval from the manager can be done through the system.
8. The input of asset requests, asset delivery, and verification of asset receipts are controlled because the data in the system requires all stages of the process to be synchronized.

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