


Goods Inventory Card System Design Using The Unified Modeling Language (UML) of Department Libraries and Archives at Medan City

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ABSTRACT

Government Regulation Number 27 of 2014 concerning Processing of State/Regional Owned Goods is intended to support the development of an area where state assets or goods are held based on the results of an appropriate needs analysis and meet the efficiency principle. Asset management Libraries and Archives Department at Medan City. But until now the local asset management in the Department of Library and Archives Medan City Government has not had asset management information system that supports accordance with Regulation No. 17 Year 2007 Chapter VII of the administration of section 25 which contains the data collection activities, inventory and reporting. Based on the above requires a management information system design goods and assets in order to facilitate the work in developing SIMBADA existing system. The system development process uses Waterfall and UML design methods as system business process development tools. The results of the design has been made known that the design of this system can meet the asset management process in accordance with Regulation No. 17 Year 2007.

Keyword : Object; Assets; System Design; UML

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1. INTRODUCTION

Assets are all things that can be used by an organization for its operational activities (Borek, A et al., 2013) (Peshkov, A. V, 2020). The organization has unlimited physical and non-physical assets (Alsinglawi, O., & Aladwan, M., 2018). Physical assets can be in the form of buildings, warehouses, money, vehicles, and so on (Qiu, X et al., 2015). While non-physical assets such as trademarks and technology patents (Malik, S. A., & Coombe, R. J., 2021). Because assets have an important position for the sustainability of the organization, it is necessary to pay attention to asset management (Moustaghfir, K., 2009).

Asset management is one of the important elements that form the basis for the preparation of regional financial reports (Suwanda, 2015). Therefore, asset management must be done properly, orderly and systematic. Based on Permendagri No. 17 of 2007, regional property is all regional assets, whether purchased or obtained at the expense of the regional income and expenditure budget or derived from other legitimate acquisitions, both movable and immovable, along with parts thereof or which are certain things that can be assessed, counted, measured or weighed including animals and plants except money and other securities (Suwanda, 2015).

At the Medan City Government Library and Archives Service, in conducting inventory and reporting of Goods Inventory Card data and asset valuation reports, they still use Microsoft Excel and have not fully implemented technical guidelines for managing regional property. Problems arising in the Department of Library and Archives Medan City government is the difficulty in making the report because of incomplete data collection items and search data that is difficult because data is separated or lost. Thus, the Department of Libraries and Archives Medan City Government requires an Asset Management Information System to assist in the process of regional property management.

The problem has a very unfavorable effect if there is an examination of the Audit Board of the Republic of Indonesia. Therefore, it needs to be a system design which can later be used to build

applications for data management assets. This design could constitute grounds later in making procurement activities proposed asset management application reports.

To develop and design an application in accordance with the existing conditions required a tool. One of the tools that can be used in building a business process model system is the Unified Modeling Language (UML). Based on the results of the study (Liu, WY et al., 2011), (Qi, Y, 2016), and (Fauzan, R et al., 2019), they use the UML in forming a business process management system asset with the results of the formation of a draft system according to the needs of the organization.

Therefore, based on the explanation above, this research focuses on the design of developing a card inventory management system at the Medan City Government Library and Archives Service using UML. Where this design will be able to assist the Department of Libraries and Archives Medan City Government in building asset management information system in accordance with the existing regulations.

2. RESEARCH METHOD

In the development stage asset reporting system design is done with the following steps:

1. Data Collection

The data collection carried out in this study was carried out by direct observation of the field. Where this activity begins with studying the asset system based on the technical manual for the processing of regional property, and knowing the obstacles that are often faced.

Then collect documents, from the results of collecting documents such as the Goods Inventory Card (GIC) which have not been used properly, making it difficult to report and track goods.

From the observation results obtained to create a problem that it becomes difficult dikarenakan asset reporting documents existing assets are not manageable with good and how much data is missing or separated documents so difficult in reporting. In addition, the reporting has not fully implemented what is in the regional goods processing manual that has been approved by the Government, such as in the goods code section and the location of goods.

Furthermore, after observation, the researcher identifies the problem with describing it in the form of a fishbone.

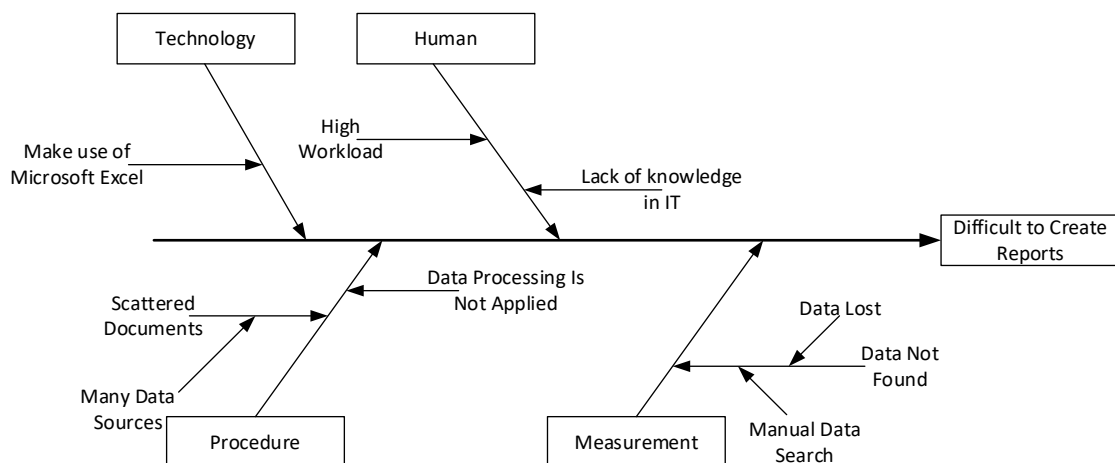


Figure 1. Fishbone Diagram Analysis of The Problem

From figure 1 presented there are several factors that need to be considered by the Medan City Government Library and Archives Service in developing a new system including human factors, technology, measurements and procedures. There is one important factor that must be seen by the Medan City Government Library and Archives Service, namely there is no Information System to regulate regional asset reports.

2. System Analysis

At this stage the system analysis makes a logical system design based on the data collected during the system investigation stage. In this stage the researcher uses the Use Case Diagram method to present business processes or functions that exist in the system and Activity Diagrams that describe the sequence or workflow on the system.

3. System Design

In the system design stage, it aims to set the logical pattern in the system's business processes. In designing a good system, it is necessary to reduce the dependence between each process on a system. If one feature on the system is damaged, then it will not affect the system as a whole. In this research, the design of the business process system uses the Unified Modeling Language (UML).

The results of the systems analyst described in the following table.

Table 1. Need Analysis

Number	Process	Requirement
1.	Input	<ul style="list-style-type: none"> - Master Data Location - Master unit data, brand, acquisition, physical condition - Master data Item inventory card
2.	Process	<ul style="list-style-type: none"> - Master Data Management: add, edit, delete - Location data management: add, edit, delete - Item Inventory Card data management: add, edit, delete - Profile data management: edit profile - User Management: add, edit, delete
3.	Output	<ul style="list-style-type: none"> - Item Inventory Card Report - Room Inventory Card Report - Regional Asset Valuation Report

4. Result

The result of system design and asset inventory item is later in the form of business process systems that can be applied to making application development.

3. RESULTS AND DISCUSSION

A. Design Result

At this stage the author will explain the events that occur in the Regional Goods and Asset Management System which is described using use case diagrams, activity diagrams.

1. Use Case Diagram

At the initial stage, what is done is to describe the entities and actors involved in the system using use case diagrams. Use case diagrams are used to describe functional steps or business processes (Fauzan, R et al, 2019). A system is described by use case entities and external entities are also called actors or users. Each actor starts the case by asking the system to perform a function or process (Aleryani, A. Y., 2016). In this research, researchers use use case diagrams to draw existing functions or processes, which are shown in Figure 2.

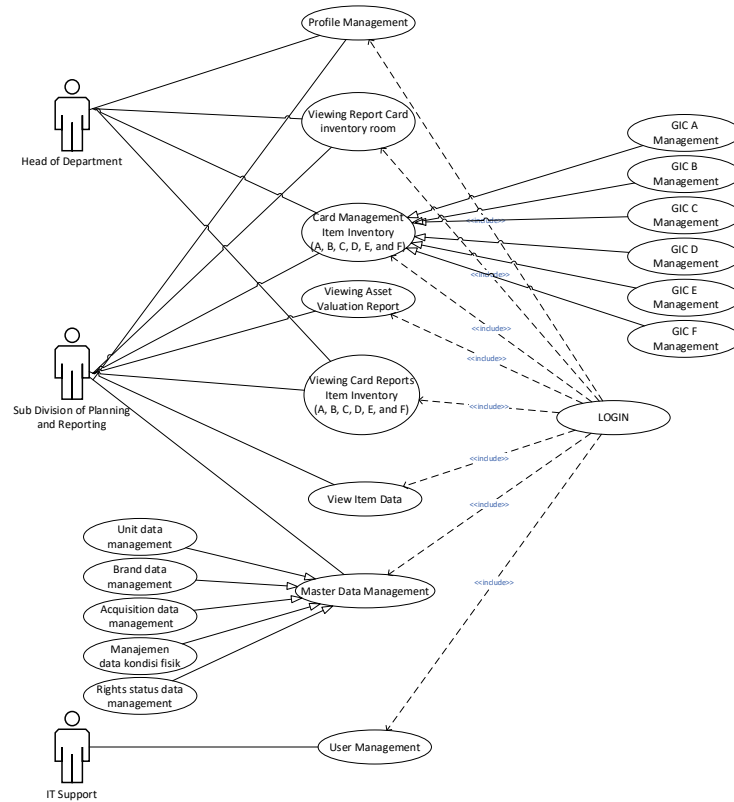


Figure 2. Use Case Diagram System

Users are presented in figure 2 this system is divided into three, namely: Head of Department and the Secretariat, Sub Division of Planning and Reporting and IT Support. Each user has different access rights and to perform operations each user must first log in. The Planning and Reporting Section has access to carry out all management operations and data reporting of the Goods Inventory Card (GIC) and Room Inventory Card (RIC). The Head of Service and Secretariat can access the results of GIC and RIC data management carried out by the Planning and Reporting Sub-Section but are limited to report operations. IT Support serves as user data management.

2. Activity Diagram

- Activity Diagram Master Data Management

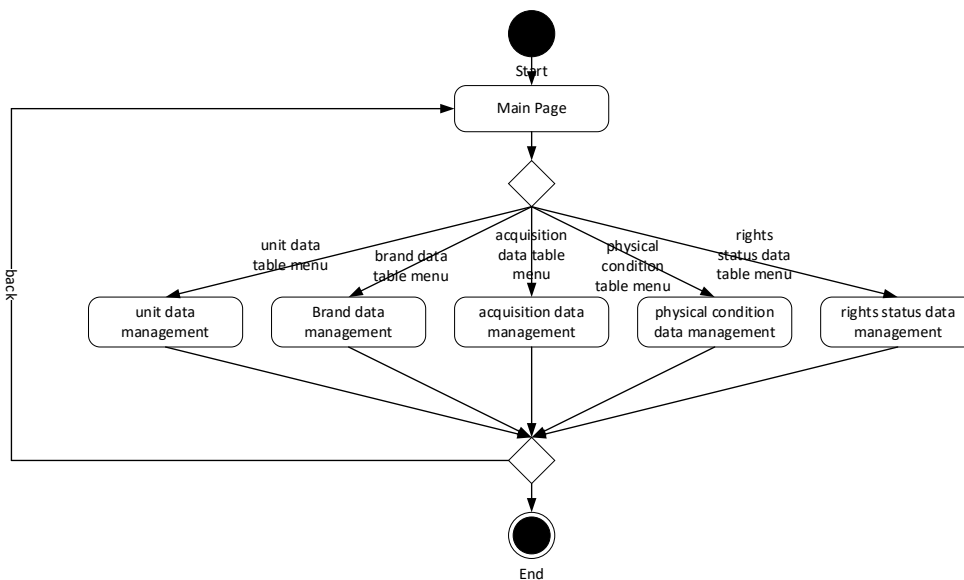


Figure 3. Activity Diagram Master Data Management

In this activity diagram, the Planning and Reporting Sub-Section must first log in to be able to manage master data. The master data management activity diagram consists of five data management processes which will be explained in the following subsections.

- Activity Diagram Unit Data Management

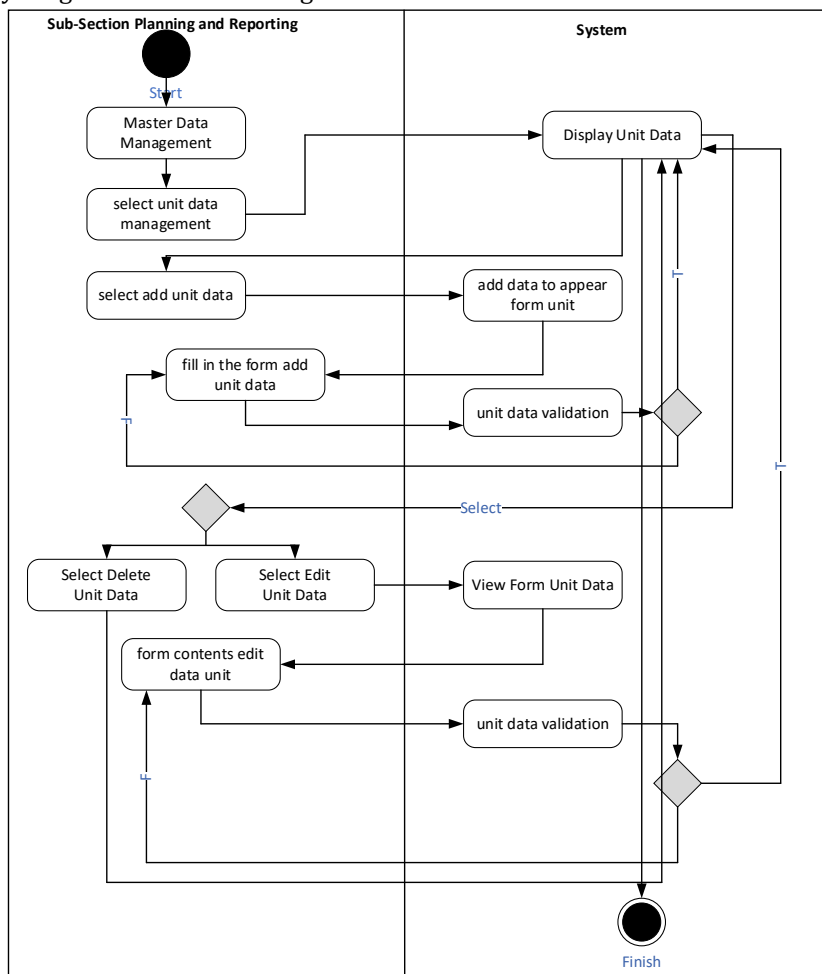


Figure 4. Activity Diagram Unit Data Management

In this diagram activity Sub Division of Planning and Reporting can add data unit to perform select the plus button, the next page will appear add data unit, after the Sub Division of Planning and Reporting enter data unit. The input data in question are: unit code and unit name. The unit data that has been filled in correctly is then saved by selecting the save button, if successful, the unit data will appear on the unit data management page. The Planning and Reporting Sub Division can also edit the unit data by selecting the edit button, then the unit edit page will appear, after that The Planning and Reporting Sub-Section performs editing of unit data. The data that is changed is the name of the unit. The unit data that has been filled in correctly is then saved by selecting the save button, if successful, the unit data will appear on the unit data management page.

- Activity Diagram Brand Data Management

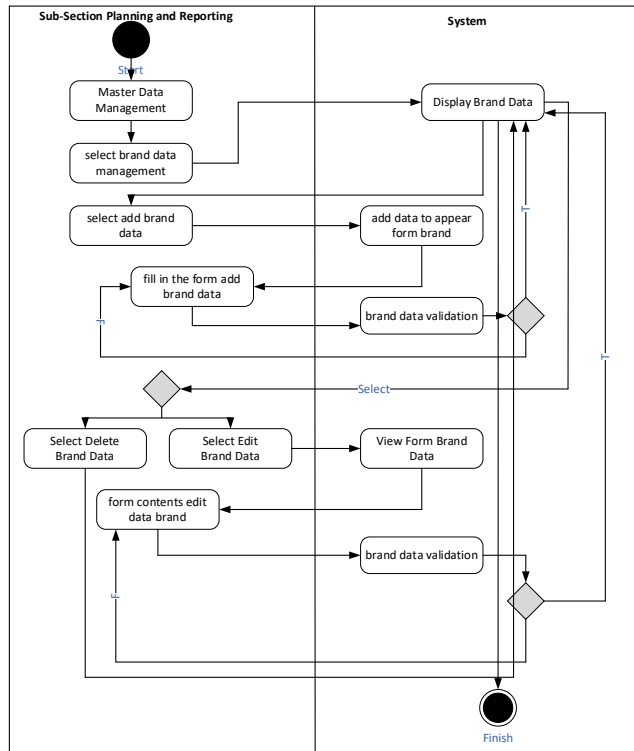


Figure 5. Activity Diagram Brand Data Management

In this activity diagram, the Planning and Reporting Sub-Section can add brand data by selecting the add button, then the Add brand data page will appear, after which the Planning and Reporting Sub-Section fills in brand data. The input data in question are: brand ID and brand name. Brand data that has been filled in correctly is then saved by selecting the save button, if successful, the brand data will appear on the brand data management page. The Planning and Reporting Sub-Section can also edit brand data by selecting the edit button, then a brand edit page will appear, after which the Planning and Reporting Sub-Section edits brand data. The data that is changed is in the form of brand names. Brand data that has been filled in correctly is then saved by selecting the save button, if successful, the brand data will appear on the brand data management page.

- Activity Diagram of Inventory Card Management (A, B, C, D, E, and F)

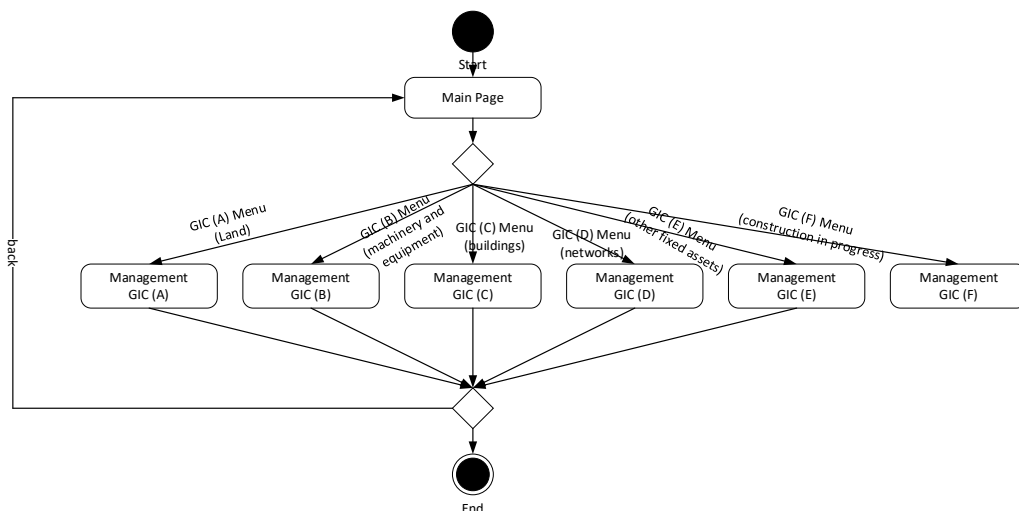


Figure 6. Activity Diagram of Inventory Card Management (A, B, C, D, E, and F)

In this activity diagram, the Planning and Reporting Sub-Section must first log in to be able to manage GIC data. The GIC data management activity diagram consists of six data management processes which will be explained in the following subsections.

- Activity Diagram GIC-A Management

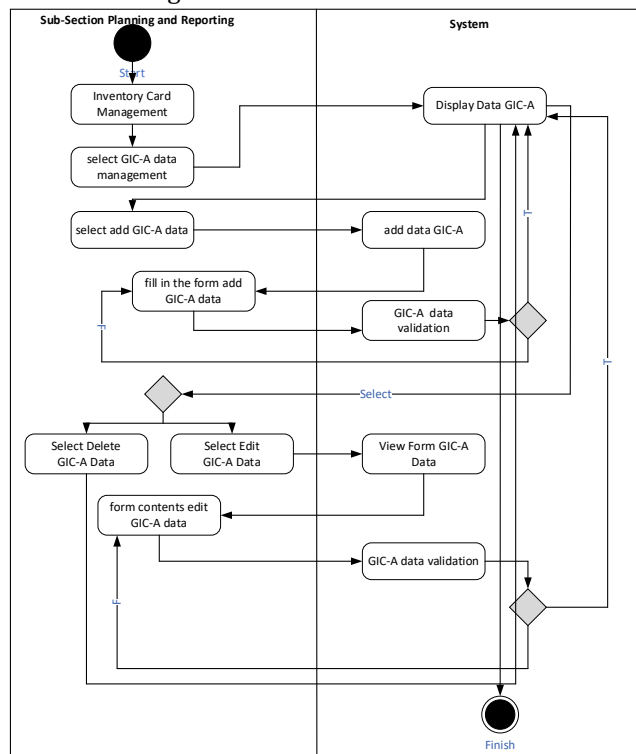


Figure 7. Activity Diagram GIC-A Management

In this activity diagram the Planning and Reporting Sub-Section can add GIC-A data by selecting the add button, then the Add GIC-A data page will appear, after that the Planning and Reporting Sub-Section fills in GIC-A data. saved by selecting the save button, if successful the GIC-A data will appear on the GIC-A management page. The Planning and Reporting Sub-Section can also edit GIC-A data by selecting the edit button, then the GIC-A edit page will appear, after that the Planning and Sub-Section Reporting for editing GIC-A data.

- Activity Diagram Profile Management

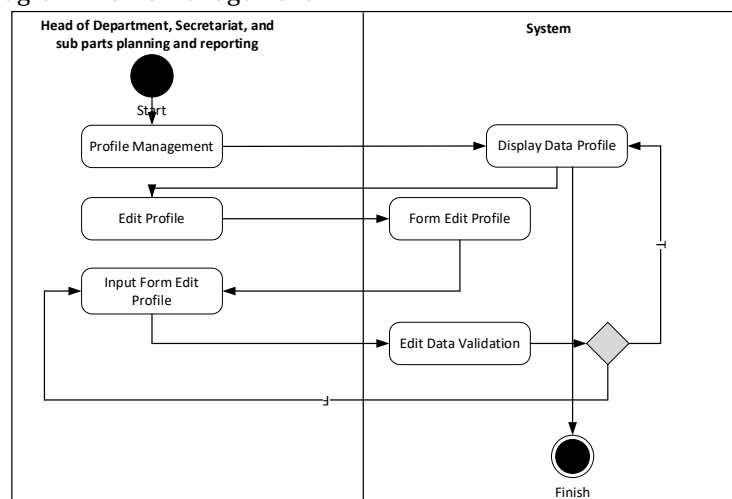


Figure 8. Activity Diagram Profile Management

In this diagram activity Head of Department, Secretariat and Sub Division of Planning and Reporting edit profile data by conducting select the edit profile button, then the edit profile page will appear, after which the user editing profile data. The changed data is in the form of first name, last name, email, position, password and username. The profile data that has been filled in correctly is then saved by selecting the submit button, if successful, the user data will appear on the profile management page after a new session.

B. Discussion

The design of the system in this study is the stage after an analysis of the system development cycle that is defined from functional requirements and preparation for design implementation that illustrates how a system was formed, which may include drawing, designing and making of sketches or arrangement of several separate elements into one unified whole and functioning also involves the configuration of hardware components and software.

Based on the results of a thorough analysis, then designed an information system asset management, system design that researchers made this is one of the solutions offered to develop procedures for data collection on existing assets in the Department of Library and Archives of the City of Medan. With the design of this web-based application based on the information needs of each party, it is expected to be useful and assist in managing the assets needed quickly and easily in accessing.

From the results of the design that has been carried out by researchers on the Regional Property and Asset Management Information System at the Medan City Government Library and Archives Service, it can be explained that asset management at the Regional Property Management Bureau of the Medan City Government Library and Archives Service is done manually so that asset management is not optimal. and reporting of assets as well as by using Microsoft Office Excel also lead to inter-related data is not integrated or connected.

With the prototype generate asset management information system that is expected to increase in the management of existing assets of Regional Property Management Bureau of the Department of Library and Archives of the City of Medan. This research resulted in a design of an asset management information system that provides services in the form of information consisting of: asset planning, asset procurement, asset receipt, asset placement and related reports.

4. CONCLUSION

Through the results of the analysis, system design, and database design, it can be concluded.

1. The process modeling design is described using the Unified Modeling Language (UML) design tool which consists of Use Case Diagrams and Activity Diagrams. The process modeling design is designed in accordance with the existing conditions of the asset management activity flow at the Medan City Government Library and Archives Service.
2. The design of data modeling on the system uses a design tool in the form of a Class Diagram which consists of the relations of planning requirements and, relations of planning needs and budgets and relations of report requirements. The interface design is web-based, the interface design consists of a login display, home menu, needs planning menu and asset budgeting, asset procurement menu, asset inventory menu, asset maintenance menu.

REFERENCES

- Borek, A., Parlikad, A. K., Webb, J., & Woodall, P. (2013). *Total information risk management: maximizing the value of data and information assets*. Newnes.
- Alsinglawi, O., & Aladwan, M. (2018). The effect of invisible intangibles on volatility of stock prices. *Modern Applied Science*, 11, 290-300.
- Qiu, X., Luo, H., Xu, G., Zhong, R., & Huang, G. Q. (2015). Physical assets and service sharing for IoT-enabled Supply Hub in Industrial Park (SHIP). *International Journal of Production Economics*, 159, 4-15.
- Malik, S. A., & Coombe, R. J. (2021). Ownership of Intangibles: Intellectual property and the contested commons. In *Routledge Handbook of Law and Society* (pp. 203-208). Routledge.
- Moustaghfir, K. (2009). How knowledge assets lead to a sustainable competitive advantage: are organizational capabilities a missing link. *Knowledge Management Research & Practice*, 7(4), 339-355.
- Suwanda, D. (2015). Factors affecting quality of local government financial statements to get unqualified opinion (WTP) of audit board of the Republic of Indonesia (BPK). *Research Journal of Finance and Accounting*, 6(4), 139-157.

- Qi, Y. (2016). The Modeling and Implementation of the Asset Management System of the Automobile Maintenance Shop Based on RFID. In *2016 International Conference on Education, Management Science and Economics (ICEMSE-16), Singapore, during Dec* (pp. 26-28).
- Liu, W. Y., Guo, W., & Du, Q. (2011). Model design of instrument and equipment management system based on UML. *China Medical Equipment*, 11.
- Aleryani, A. Y. (2016). Comparative study between data flow diagram and use case diagram. *International Journal of Scientific and Research Publications*, 6(3), 124-126.
- Fauzan, R., Siahaan, D., Rochimah, S., & Triandini, E. (2019, July). Use case diagram similarity measurement: A new approach. In *2019 12th International Conference on Information & Communication Technology and System (ICTS)* (pp. 3-7). IEEE.
- Fauzan, R., Pamungkas, V. Y., & Wibawa, J. C. (2019, November). Information System for Asset Management. In *IOP Conference Series: Materials Science and Engineering* (Vol. 662, No. 2, p. 022020). IOP Publishing.
- Peshkov, A. V. (2020, June). Smart technologies as a type of intangible assets of a construction organization and mechanisms for their implementation. In *IOP Conference Series: Materials Science and Engineering* (Vol. 880, No. 1, p. 012081). IOP Publishing.