

Monitoring and Evaluation Information System Modeling Using Activity-Based Costing Method in Banking Credits

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Abstract - The purpose of this research is to develop a model of the monitoring and evaluation information system for banking credits by using Activity-Based Costing (ABC) methods (XYZ-Sharia Bank in Indonesia, as a case study). Nowadays, the high percentage of the ratio of Operating Expenses and Operating Revenues are the finding problems in sharia banking operations. In this case of study, that 92.78% of the operating income obtained by the XYZ Sharia bank is used to finance the bank's operations. Based on this fact, the ABC method applied to track costs especially in this case for the product or process of banking credit. The ABC method also traces resources to activities than to cost objects for more accurate cost distribution. Therefore, serious consideration is required to use the ABC method in realizing the modeling of monitoring and evaluation of information systems in the banking credit activities. The result of this study shows that activity-based costing method in monitoring and evaluation of information system modeling in bank credits provides a good starting point in heading toward better decision making. Thus, this case study contributes how an ABC costing method that improves banking credits operations. So this is a better meet the needs of Sharia Banking in a more cost-effective manner.

Keywords - ABC Method, Monitoring and Evaluation, Information System Modeling, Banking Credits

I. INTRODUCTION

Since the beginning of the development of Sharia banking system in Indonesia, total assets of Sharia banking has increased rapidly. Thus, the rapid development of these assets will increase the profitability of Sharia banking. The development of assets and profit of sharia banking, it can affect the growth of Islamic banking organizations. The growth of the organization directly or indirectly can affect profitability. Until the end of June 2015, the total number of workers in sharia banks reached 38,307 people [1]. The size of the organization will be directly proportional to the bank's operating costs, which directly affects the bank's earnings. According to the Financial Services Authority, by the first semester of 2015, the ratio of Operating Expenses and Operating Revenues of Islamic banks reached 92.78% [2]. In order to control operational costs to maintain bank income, a system is needed to monitor operational costs and to evaluate the targeted disbursement of funds and revenues of a business unit. So based on this, it can be seen whether the revenue generated already cover operational costs. Using Activity-

Based Costing (ABC) method [3] in a monitoring and evaluation information system [4] as one of the considerations.

Kusek et al [4] in their study has stated that monitoring activities should focus more on the ongoing activities. Based on the OECD [5] it was defined that the evaluation is a systematic and objective assessment of a project, program, or policy of ongoing or completed tasks to confirm that the implementation of activities are on track (within the guidelines and program planning). Thus, a Monitoring and Evaluation system is a management toolkit that enables decision makers to track progress and demonstrate the impact of a particular program [6]. The purpose of this system is to provide information to program managers in the event of obstacles and irregularities, as well as input in the evaluation.

According to the Indonesian Bankers Association [7], credit is one of the main channel that provides income for banking institution, yet it is also followed by a state of risk that needs to be considered. Therefore, monitoring and evaluation is very desirable in making the provision of credit by a bank. This is to prevent the credit problems from emerging in the

future. Along with this, in today's business activities, the Information Systems is also significantly influencing the banking credits management. Consequently, a management information system (MIS) is a strategy and a set of protocols to enable people to obtain the information they need to manage their business [8]. A monitoring and evaluation information system (MEIS) is one type of MIS that was designed to mitigate poor business performance, demonstrate accountability and promote organizational learning for the benefit of future business [8]. This study, focus in the MEIS modeling for the distribution of funds to the public, with a credit case from one of the Islamic Bank in Indonesia named the XYZ Bank. Additionally, the study applies an applied research with qualitative approach [9] as the methodology to realize the research objective. In relation to this, some preliminary studies are needed, particularly to comprehensively understand the concept of monitoring and evaluation systems as well as the process of credit distribution in the banking system.

Some studies related to monitoring and evaluation system for bank credit that has been done before. Some studies that discuss the Regional Development Bank[10], The application of the concept of Monitoring and Evaluation addressed to the application of the concept of monitoring and evaluation with an implementation project [11] and research related to the process of monitoring and evaluating the distribution of funds for project development and economic growth in Kenya[12], and Modeling Information System Monitoring and Evaluation in the case BAPPEDA in Manado using Agile approaches and Spatial Method [13].

Theoretically, this study contributes to development of science and business information system, particularly in applying a model of information system for monitoring and evaluation using ABC method in banking. For in this case, a banking credit problem in the "XYZ" Sharia Bank in Indonesia.

II. MATERIAL AND METHODS

The process of granting credit to the public by the banks need a way of monitoring and evaluation in a model information system, thus providing good benefits for the bank.

2.1 Banking Credit Process

According to Indonesian Bankers Association (Ikatan Bankir Indonesia (IBI), in Indonesia) defines that credit is one of the bank's risky business, but on the other hand provide income from lending [7]. Therefore, credit must be carried out by a clerk / credit who know and understand the basics of credit. Credit process requires a deep understanding that the

way of credit, from loan processing to loan repayment goes well.

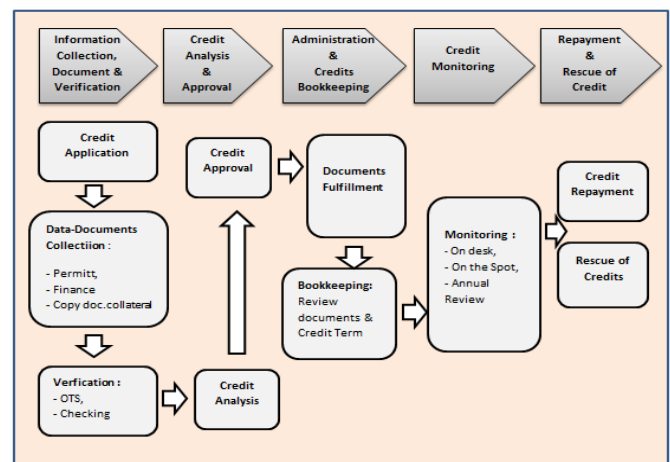


Figure. 1 Banking Credits Process [7]

2.2 Monitoring and Evaluation Concept

Monitoring is a routine, ongoing, internal activity which is used to collect information on a programs activities, outputs, and outcomes to track its performance[4]. Evaluation, as gleaned from the OECD [5], is a systematic and objective assessment of an ongoing or completed project, program, or policy. The aim is to determine the relevance and fulfillment of objectives, development efficiency, effectiveness, and impact. The evaluation process provides an explanation of why the results, targets and results, or not, is achieved.



Figure 2. Monitoring and Evaluation Concept [6]

2.3 Activity Based Costing

According to Bajus and Stasova [17] stated that Activity Based Costing (ABC) method provides a wide range of information about costs, operations, activities, outputs and cost objects. Thus, Activity-Based Costing is an accounting method used to trace costs to a product or process of an organization.

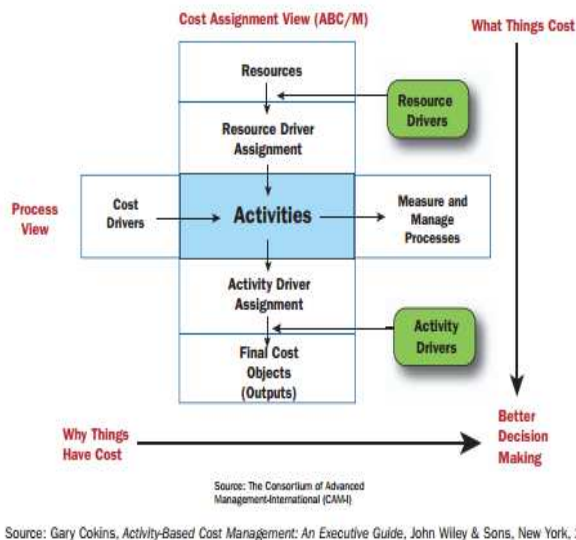


Figure. 3 Activity-Based Costing Framework [3]

An ABC system can be viewed in two different ways: the cost assignment view and the process view. The cost assignment view provides information about resources, activities, and cost objects. The process view provides operational (often nonfinancial) information about business processes and the activities that belong to them. These two views of ABC can be visualized as pictured in Figure.3. The cost assignment view of ABC can be seen in the vertical portion of Figure.3, while the process view is represented by the exhibit's horizontal portion. Work activities in the inter section are essential for both views. Cookins [3] revealed that for purposes of measuring costs, the difference is:

- (1) The cost assignment view transforms the expenses of resources (e.g., salaries, supplies) into the costs of the work activities (for both people and assets) and ultimately into the final cost objects (e.g., products, customers).
- (2) The process view sequences the work activities in time and accumulates the build-up of activity costs from start to end of a business process.

2.4 Conceptual Framework

Based on M & E Concept, Credits Banking process and The Information System Model using ABC Method approached than developed a conceptual framework., as describe in Figure 4. The conceptual framework of monitoring and evaluation information system for bank credits, as in Figure 4, can be explained as follows:

- (1) The purpose of this business is the monitoring and evaluation of bank credit. This objective was made to overcome the problems high percentage of operating

expense and operating revenue ratios that lead to low-profit targets obtained by the Bank of the low NPL Banking and improve the quality of credit.

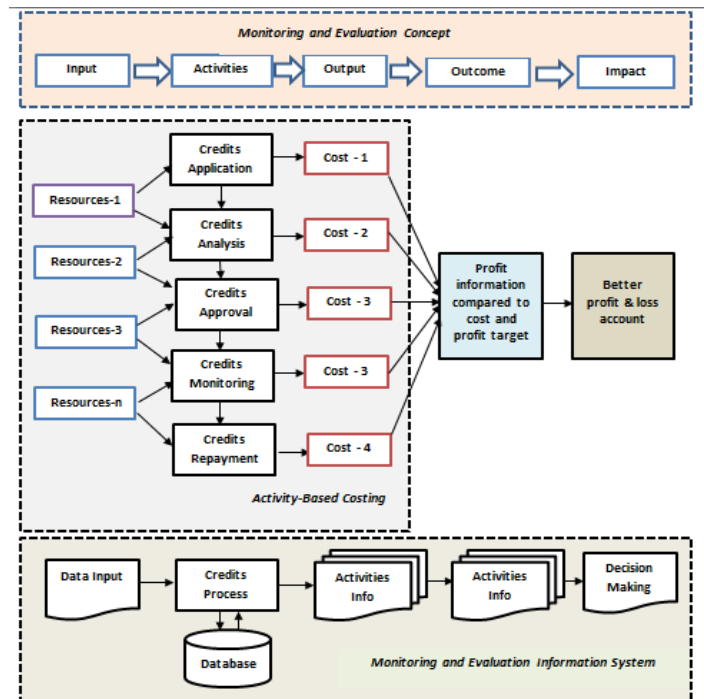


Figure 4 Conceptual Framework of MEIS

- (2) The concept of Monitoring and Evaluation [4],[5],[6] and ABC method [3] used in modeling information systems of monitoring and evaluation of bank credits.
- (3) Business Process Model is the Banking Credit process is a standard set by Bank Indonesia as the Central Bank of Indonesia [1].
- (4) Model Information System to be developed is the Monitoring and Evaluation Information System Modeling for the Bank Credits, in this case study on XYZ Sharia Bank as one of the Sharia Bank in Indonesia. In information system modeling will be illustrated with process and data modeling [14], [15] and information systems architecture [16].

2.5 Research Methodology

The research was conducted in Indonesia by taking one of Sharia Bank, namely the Bank XYZ, as a case study. In relation to this, the study utilized the applied research with qualitative approach as its main methodology [9]. In particular, model of information system is developed using the In this study, primary data is collected directly from the respondents. Consequently, the collected data is constructed from the collection of interviews' responses or results from the assessment process to identify the importance of a banking

credit system. In this study, in-depth interviews with respondents is conducted i.e. with the Chairman of Bank XYZ Sharia, where the result is produced by implementing the qualitative analysis. Descriptively, this research generates a model of information system. Furthermore, we conduct an evaluation phase to confirm and declare the reliability and validity of the model, this type of evaluation is named the confirm-ability test as stated by Creswell [9]. Later, to complete the test we invited the Information System practitioners and the experts in banking information system, which addresses the problems of bank credit

III. RESULT AND DISCUSSION

4.1 Case Study

Sharia Bank is the key partner of the Government Bank in Indonesia that supports the working program of the Government who required financial services and banking. Therefore, to be able to provide excellent financial services for the Government, the Sharia Bank must consider the utilization of information technology to support their business. However, there are only few Sharia Banks in Indonesia that has already developed banking products with information technology as their core system, such as the mobile banking and the Internet banking. The development of assets and profit of sharia banking, it can affect the growth of Islamic banking organizations. The growth of the organization directly or indirectly can affect profitability.

The results of in-depth interviews with the Chairman of XYZ Sharia Bank, has found that the ratio of non-performing loans (NPLs) increased from 1.04% in 2014 to 1.54% in October 2015 and the conditions in the last year of 6.4%. Despite the decline in performance in 2015, Bank XYZ remains optimistic that their earnings will increase by the end of this year. Until the first half of 2015, the ratio of Operating Expenses and Operating Revenues (BOPO ratio, in Indonesia) of XYZ Sharia Bank reached 93.84%. In order to control operational costs to maintain this bank income, a system is needed to monitor operational costs and to evaluate the targeted disbursement of funds and revenues of a business unit. The underlying reason of this believe, is the actuality that there are opportunities as long as the credit expansion is going well. To accomplish such objective, an exact information system model to monitor and evaluate banking credit using ABC method is required by the management to help in making fast and accurate decision.

4.2 MEIS Modeling Results and Analysis

Modeling of Monitoring and Evaluation Information system developed, including: Process Modeling, Data Modeling,

Modeling of Information System Architecture and modeling of information system application which is the result of this research.

A. Process Modeling

Data Flow Diagram is one information system modeling tool that illustrates the process that exists in the system. Modeling process by using Data Flow Diagram aims to show the flow of data in an information system. However, the process model is very important in defining the requirements in a graphical view [12]. Data Flow Diagram shown in the modeling of this information system is Context Diagram and Overview Diagram. Context diagram is a Data Flow Diagram illustrating the scope of the Monitoring and Evaluation System for Banking Credit. Furthermore, Overview Diagram This diagram illustrates where the overall process that occurs in the monitoring and evaluation system for bank credits.

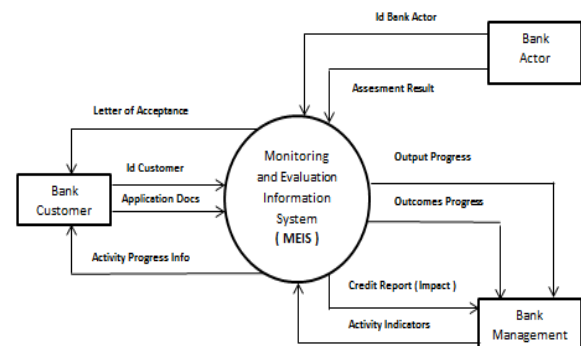


Figure. 5 Decomposition Diagram Level 1 of MEIS

Figure 12 shows the MEIS for banking credit Context Diagram (as a process): ID Bank Customer Credit, Application Documents, Payment Vouchers and Cash are input of the M&E System for Banking Credits while letter of acceptance Documents, Output Progress, Outcomes Progress, and the Credit Report/Impact are the output of the same system. The functional data flow diagram is reflected in figure 6.

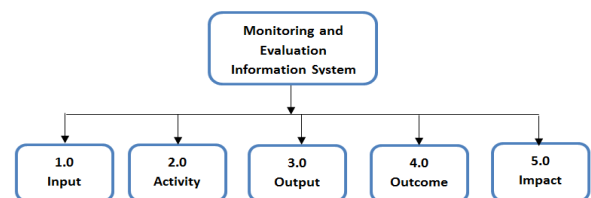


Figure. 6 First Level decomposition of MEIS

Figure 6, shows the first level functional decomposition chart of the M&E process modeling. Each process in the decomposition is a parent process. In this case, each process in

the first level decomposition is a parent process that has children processes.

B. Data Modeling

In general, data requirements for systems development and maintenance must be modeled using Entity Relationship Diagrams, as can be seen in Figure 7.

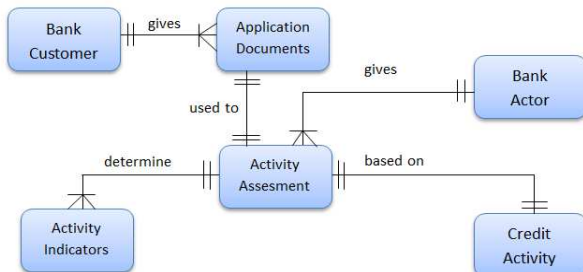


Figure. 7 Entity Relationship Diagram of MEIS

C. Information System Architecture Modeling

Information System Architecture is typically used to complement the results of an Information Modeling System. In Figure 14, it is the described the operations provided by the MEIS (and which IT components implemented it). As described the Information System Architecture in Figure 8, the MEIS «IS Block» is implemented through two «IT Blocks» (one for data and another for logic and user interface), supported in «IT Platforms» and a mainframe computer.

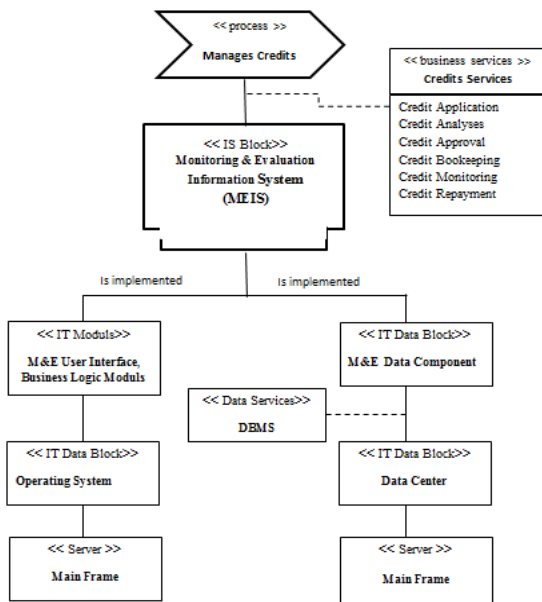


Figure. 8 Information System Architecture of MEIS

D. Information System Application Modeling

Application Modeling of Monitoring and Evaluation Information System, the main design is the main menu prototype. The results can be seen in Figure 9.

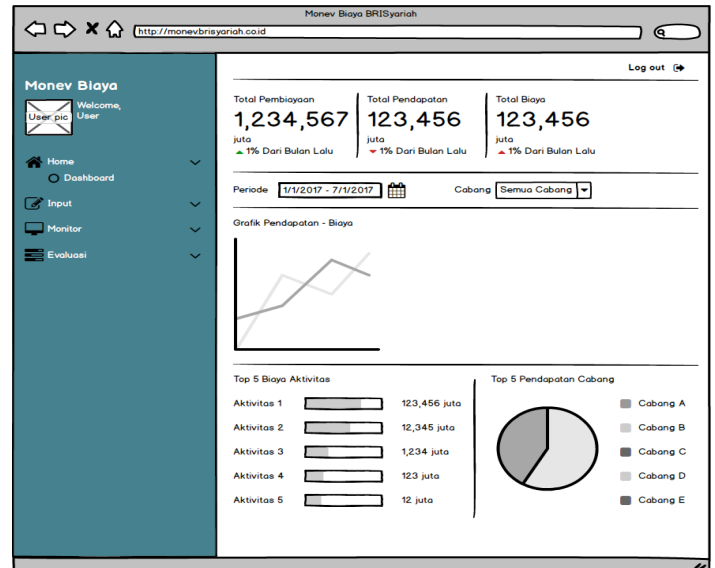


Figure.9 Main Menu of MEIS Model

In Figure 9 Main Menu from MEIS Application. This menu appears after the user successfully log in. Each user will have the same dashboard view. However, the data displayed matches the user's permissions. Branch Manager as a user can only access data on the branch he leads. However, credit managers and Financial Controller Managers at headquarters can access data across branches.

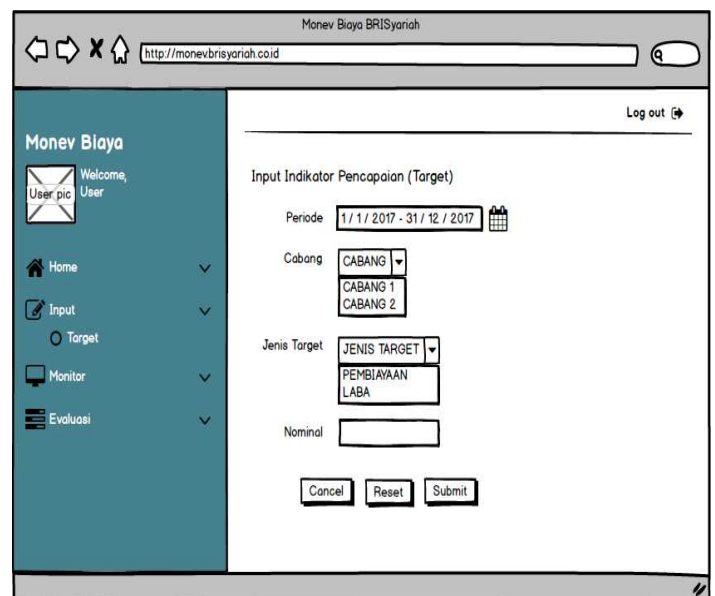


Figure 10 Input Indicator in Menu Entry of MEIS Model

Inputto Credit Indicator in menu generated information system shown in Figure 10. Credit Managers can only access this menu at headquarters. The head office credit manager (as his role) has the task to set the target financing and profit at the branch office.

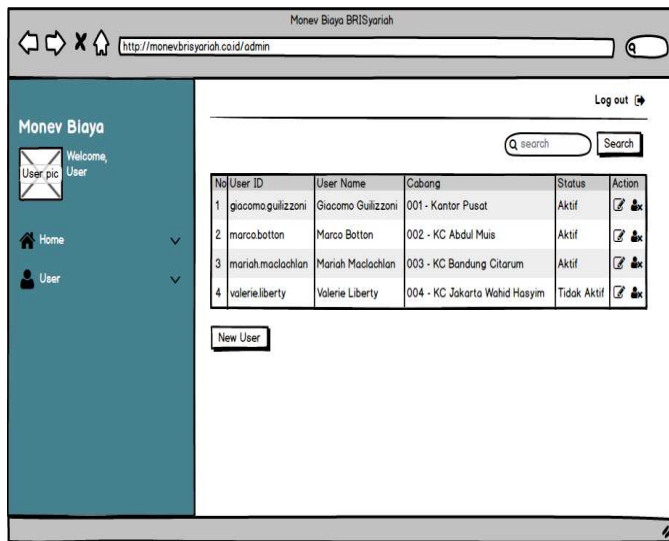


Figure 11 Input User in Menu Entry of MEIS Model

Input user in menu generated information system shown in Figure 11. This menu is used by admin user to manage user application. This page can be added by adding a "/ admin" prefix after the app's URL address.

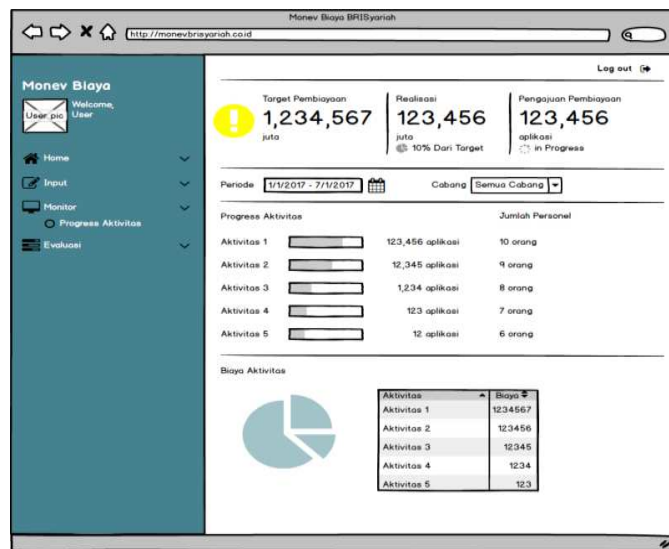


Figure 12 Activity Menu Report of MEIS Model

Figure 12. shows the menu of banking credit activities. This menu is used by the Branch Manager (as a user) to monitor the progress of financing disbursement activities at the branches. Besides, it also related costs arising from these

activities. Furthermore, Branch Managers can access data to determine the number of people involved in an activity.

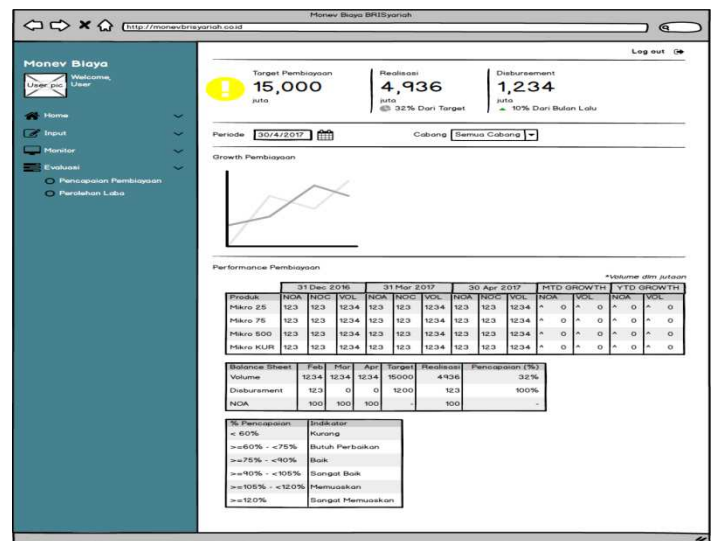


Figure 13. Output Menu Report of MEIS Model

Figure 13., shows the output menu of financing achievement.

This menu used by the credit managers and financial controller managers at headquarters. From this menu, they can evaluate the achievement of financing by comparing with the financing target set at the beginning of the year. Users at the headquarters can access the data of all branches. While users in branch offices can only see the data on their branch.

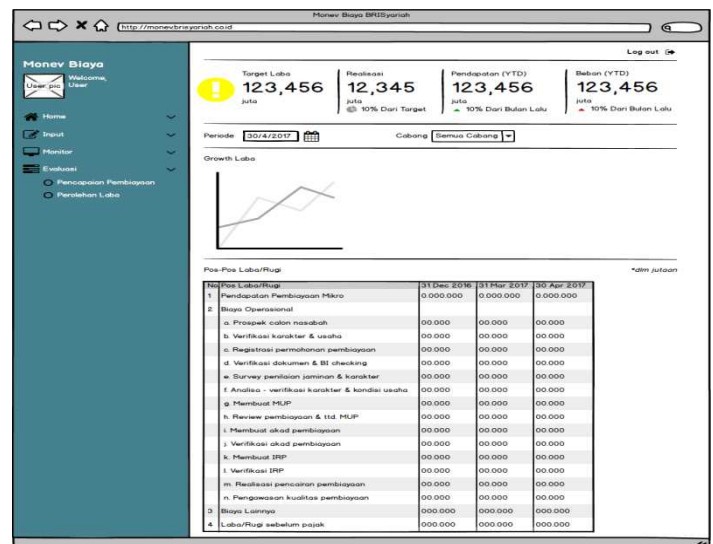


Figure 14 Outcome Menu Report of MEIS Model

Figure 14 shows the outcome of achievement of earnings. This menu is used by Financial Controller managers at headquarters to evaluate projected earnings compared to

predetermined profit targets. the user (in the branch office) can only see the data on his branch..

E. Evaluation and Implication

The model evaluation using a confirm-ability test, where the test is used to test the reliability and validity of the model. Researchers invited banking practitioners and experts who know the problem of information systems and understand the field of banking credit information system modeling. The qualitative experiment showed that 2 persons, as Bank Practitioner and the experts Information System, they stated that 80% confirm on the proposed modeling information system of monitoring and evaluation using ABC method in Banking Credits. The theoretical implication of this study is necessary to have a strong understanding of related concepts of ABC method should be translated into the process of monitoring and evaluation.

IV. CONCLUSION

This study has proposed to develop a model of the monitoring and evaluation information system for banking credits by using Activity-Based Costing (ABC) methods.

This case study contributes how an ABC costing method that improves banking credits operations (XYZ-Sharia Bank in Indonesia, as a case study).

The paper has presented banking credits issue in a real-world case study. Which case study is taken from a project in one of the Sharia Bank in Indonesia, namely the Bank XYZ. The case study is utilized to illustrate the proposal with concrete information systems modelling that is analysed from the perspective of banking management, information system and technological aspect.

Finally, this research can be further developed by implementing the computer-based system applications and integrating the proposed model with other systems owned by Bank XYZ. For the future work, we intend to evaluate the proposed model more accurately, before it applying in a real-world banking system or working environment.

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