

Business Process Analysis and Modeling Using the Business Process Improvement Framework at the Internal Quality Assurance STMIK STIKOM Indonesia

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Abstract

STMIK STIKOM Indonesia is a college that organizes two study programs namely Informatics Engineering and Computer Systems. STIKI Indonesia has set SPMI in accordance with the PPEPP cycle. To ensure that SPMI can run as stipulated, the monitoring process is carried out with an Internal Quality Audit (AMI) facilitated by the STIKI Indonesia Internal Quality Assurance Institute (LPMI). Repeated business processes cause delays in obtaining the results of AMI's recapitulation, even though the results of the recapitulation are urgently needed as a report in the Senate Meeting to be evaluated as an effort to improve quality management at STMIK STIKOM Indonesia.

Therefore the business process model that runs on the implementation of the Internal Quality Audit of STMIK STIKOM Indonesia will further be identified the existing problems and be analyzed and corrected. Business Process Improvement (BPI) is an approach or method that the writer will use to improve existing business processes at the AMI stage. BPI aims to improve business processes and ensure that issues in an organization's business processes are handled properly. Business process modeling that will be used is Business Process Model and Notation (BPMN) which is a tool to describe or model business process diagrams based on flowchart techniques, arranged to create graphical models of business operations where there are activities and flow controls that define work order

Keywords—AMI, BPI, Internal Quality Assurance, STMIK STIKOM Indonesia

1. INTRODUCTION

Higher Education is a level of education after secondary education, including diploma, bachelor, master, specialist, and doctoral education programs organized by tertiary institutions (Law No. 20 of 2003). Higher education has an obligation to facilitate the implementation of the Tri Dharma Perguruan Tinggi for the academic community in it. In its implementation, all forms of activities in higher education must lead to the quality of higher education. The class must be adjusted between the execution of higher education with Higher Education Standards. The higher education standards are consisting of National Higher Education Standards and Higher Education Standards set by tertiary institutions.

According to the Republic of Indonesia's Minister of Research, Technology and Higher Education Regulation Number 44 of 2015 concerning National Higher Education Standards. The regulation for the National Higher Education Standards (SNPT) is standard units that include National Education Standards, plus National Research Standards, and National Community Service Standards. The standard is a minimum criterion for learning at tertiary levels in tertiary institutions throughout the jurisdiction of the Unitary State of the Republic of Indonesia. In an effort to meet the minimum standards mentioned in the SNPT, each university must establish an Internal Quality Assurance System (SPMI) with a cycle that must be passed namely Determination, Implementation, Evaluation, Control, and Improvement (PPEPP).

STMIK STIKOM Indonesia or commonly called STIKI Indonesia, is one of the Private Universities under the auspices of LLDIKTI Region VIII is a college that organizes two study programs, namely Informatics Engineering and Computer Systems. STIKI Indonesia has set SPMI in accordance with the PPEPP cycle. To ensure that SPMI can run as stipulated, the monitoring process is carried out with an Internal Quality Audit (AMI) facilitated by the STIKI Indonesia Internal Quality Assurance Institute (LPMI). Based on the observation process that the author made in the process of implementing Internal Quality Audit (AMI), there are several activities related to the implementation of Internal Quality Audit, namely improving quality procedures, monitoring work plans, determining auditors and auditees, establishing AMI schedules, implementing AMI, recapitulating findings AMI, recapitulation of quality objectives. From these 7 activities, all of the implementations is still done manually. There are a number of forms that must be filled in to get the recapitulation of AMI implementation. An example that can be taken is from the recapitulation stage of AMI's findings, where the findings must be written on the findings checklist form and then written on the corrective and preventive action forms and then must be recapitulated into an excel file. Repeated business processes cause delays in obtaining the results of AMI's recapitulation, even though the results of the recapitulation are urgently needed as a report in the Senate Meeting to be evaluated as an effort to improve quality management at STMIK STIKOM Indonesia. The development of the internal quality assurance institute can also be done by merging decisions from campus decision holders [1], or by making future predictions on internal quality [2].

The purpose of this research is, the author will model the business processes that are running on the implementation of the Internal Quality Audit of STMIK STIKOM Indonesia to identify existing problems further and analyze and improve them. Business Process Improvement (BPI) is an approach or method that the writer will use to improve existing business processes at the AMI stage. According to Harrington, 1991, BPI aims to improve business processes and ensure that issues in an organization's business processes are handled properly. Business process modelling that will be used is Business Process Model and Notation (BPMN) which is a tool to describe or model business process diagrams based on flowchart techniques, arranged to create graphical models of business operations where there are activities and flow controls that define work order [3].

2. METHODS

In this research, the analysis and modeling of business processes in the Internal Quality Assurance Institute (LPMI) at STMIK STIKOM Indonesia, particularly in the Internal Quality Audit activities, is carried out with the steps as shown in Figure 1. The purpose research will analyze the problems and provide business process solutions for LPMI STMIK STIKOM Indonesia. The model for the study using the Business Process Improvement (BPI) framework, which will utilize CSF analysis and Testing Criteria to determine business processes that are considered essential and calculate criteria for their importance. Then the business process modelling is done using BPMN (Business Process Modeling and Notation), and business process simulation.

2.1 Business Process Model and Notation (BPMN)

Data Business Process Model and Notation (BPMN) is a business process modelling standard that provides graphic business process notation in business process schemes. BPMN provides organizations with graphical notations to communicate in a standard way [4].

After business processes are defined, they become the subject of analysis, refinement, and implementation from an organizational and technical perspective. Business Process Model and Notation (BPMN), a typical business process notation that is standardized and accepted in the BPM ecosystem [5], is shown in Figure 2

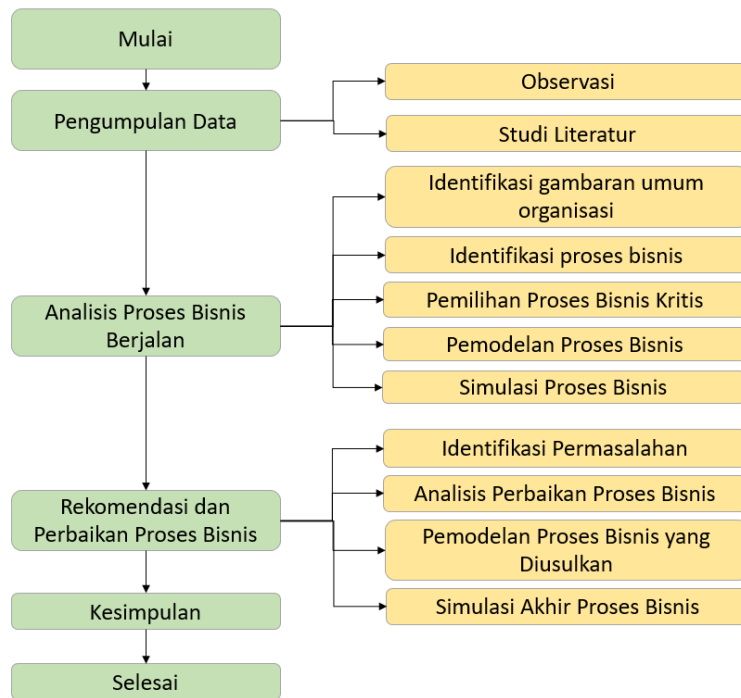


Figure 1. Research method

Figure 2 shows the outputs of the process analysis and design stages that are part of the BPM life cycle and then proceed with the process execution orientation based on the model. Therefore, BPM includes a variety of concepts, methods, and techniques to assist in the design, administration, configuration, application and analysis of business processes.

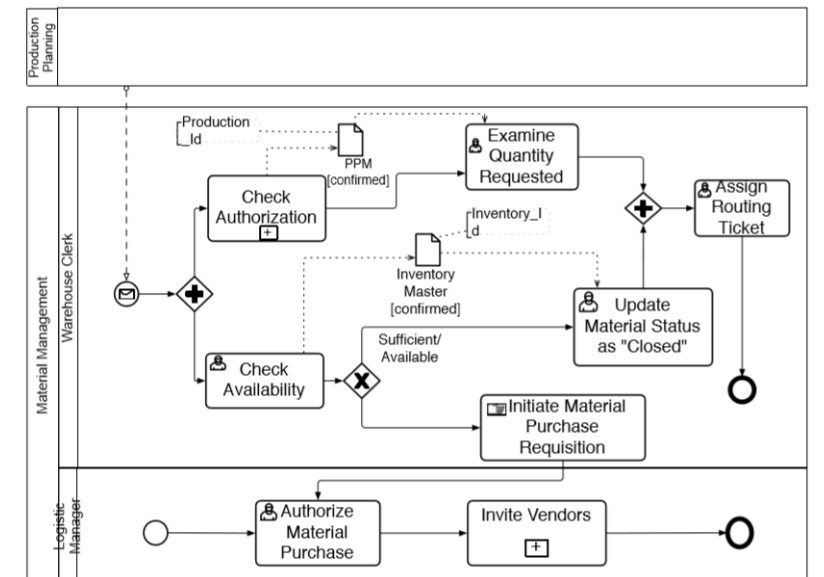


Figure 2. Example of BPMN.

2.2 Business Process Improvement (BPI)

Business Process Improvement (BPI) is a systematic framework developed to assist an organization in making significant progress in implementing its business processes. BPI provides a system that will assist in streamlining business processes by ensuring that internal and external customers of the organization will get better output than before [6]. In BPI, there are five (5) phases.

- a. Organizing for Improvement
Phase to build commitment, understanding and leadership so that the process can be successful.
- b. Understanding the Process
Step to understand and explore all dimensions of the current business process.
- c. Streamlining
Step to improve or increase the effectiveness, efficiency and adaptability of business processes.
- d. Measurements and controls
Step to implement and establish a system that aims to control the operation of continuous improvement.
- e. Continuous Improvement
Step to implement and develop a process of constant improvement.

2.3 Critical Success Factor (CSF)

Critical Success Factor (CSF) is a number of factors that will greatly influence organizational performance, organizational competition and performance on market share [5]. As stated by [7], CSF is an analytical method by considering several critical things in the company environment to define what factors influence the success and success of a company or organization and can be determined if the organizational objectives have been identified. CSF analysis provides an overview of the company about any critical aspects in each of the company's business activities and processes that affect the company's performance in achieving its vision and mission and business success.

The purpose of CSF is to interpret objectives more clearly to determine activities to be carried out and what information is needed. CSF is a collection of analyzes of many critical success processes. CSF is needed to achieve the mission of a company. Based on the results of strategy analysis through SWOT, it can be determined several factors determining the success of a strategy later after the strategy is implemented. The role of CSF in strategic planning is as a link between the organization's business strategy with its information system strategy, focusing the IS strategy planning process in a strategic area, prioritizing proposed SI applications and evaluating SI strategies.

2.4 Quality Management System ISO 9001:2008

Quality has many different definitions, from the conventional to the more strategic [8]. Understanding of quality in terms of conventional definitions generally describe the direct characteristics of a product such as reliability, ease of use, and so on. Meanwhile, according to [8], the notion of quality in terms of the strategic definition suggests that quality is everything that is able to meet the desires or needs of customers.

ISO 9001: 2008 is an ISO 9001 quality management system as a result of the revision in 2008. Broadly speaking ISO 9001: 2008 is not too much different from its predecessor, namely ISO 9001: 2000. As for the differences between the 2000 and 2008 versions significantly more emphasis on the effectiveness of the processes carried out within the organization [9].

2.5 Current Business Process Identification

After process testing the criteria using the Criteria Testing Matrix, four business processes will be identified, which will be improved, namely improving quality procedures, monitoring work plans, conducting internal quality audits and recapitulating quality targets. The following

will illustrate the business processes that are currently running in the four selected business processes based on the Criteria Testing Matrix. The author uses the Bizagi application to make a modeling of current business processes and business process improvements that will be proposed. The implementation of internal quality audits is also applied to several companies [10] and e-commerce [11].

1. Improved quality procedures

The flow of improvement of the current quality procedures at STMIK STIKOM Indonesia is sh can bow in Figure 3. Based on the results of simulations carried out using the Bizagi application, using the time obtained from observations on each activity, the results obtained that the process of improving quality procedures requires 6 Days, 10 Hours, 46 Minutes and 26 Seconds.

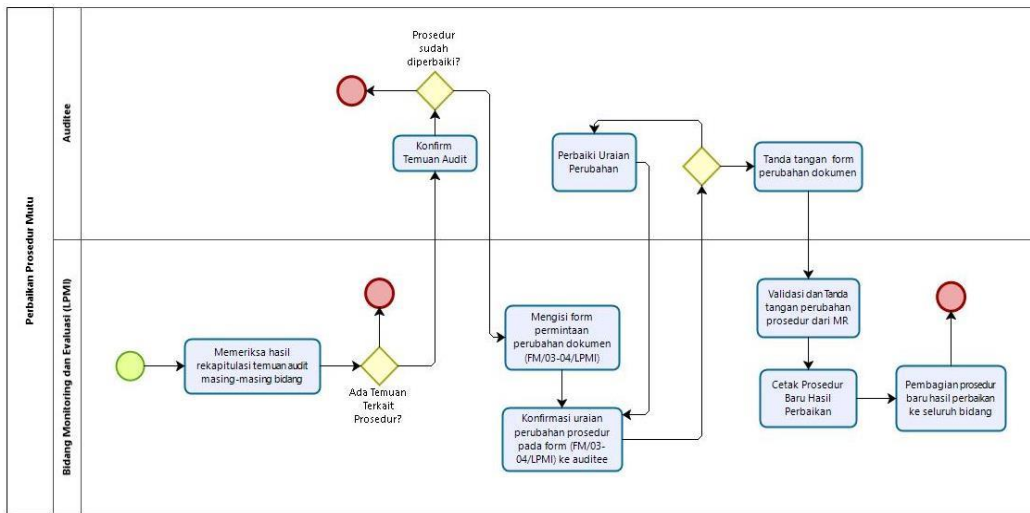


Figure 3. Business Process Model Improvement of Current Quality Procedures

2. Monitoring work plans

The flow of monitoring of work plans that are currently running at STMIK STIKOM Indonesia can be illustrated in the Figure 4. Based on the results of simulations carried out using the Bizagi application, using the time obtained from observations in each activity, the results obtained that the monitoring of the work plan in its implementation requires 18 hours, 57 minutes and 5 seconds.

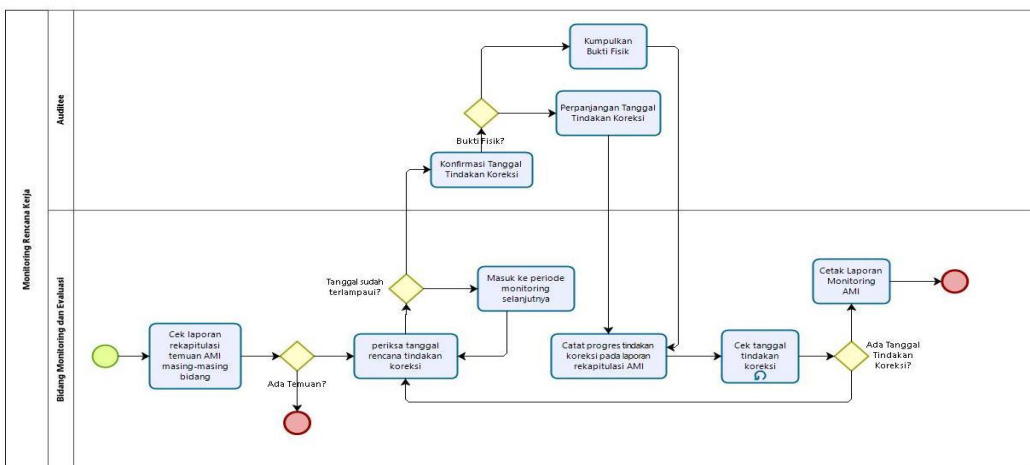


Figure 3. Current Business Process Model Monitoring Work Plan

3. Implementation of internal quality audits

The flow of the internal quality audit that is currently running at STMIK STIKOM Indonesia show in the Figure 4.

Based on the results of simulations carried out using the Bizagi application, using the time obtained from observations on each activity obtained the results that the process of monitoring the work plan in its implementation takes one day, 5 hours, 46 minutes, 45 seconds

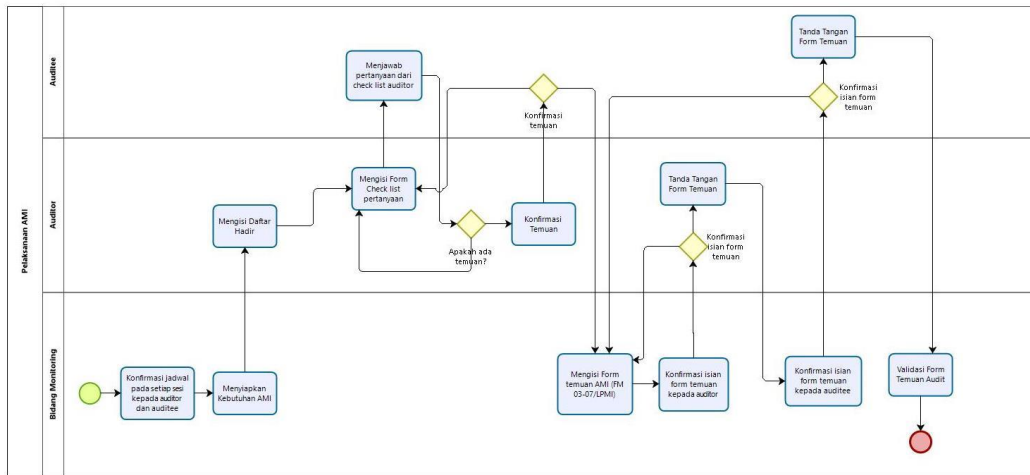


Figure 4. Current Business Process Model for Internal Quality Audit

4. Recapitulation of quality objectives

The flow of recapitulation of quality objectives currently running at STMIK STIKOM Indonesia can be illustrated in Figure 5. Based on the results of simulations carried out using the Bizagi application, using the time obtained from observations on each activity obtained the results that the process of recapitulating quality targets in implementation requires 3 hours, 39 minutes, 49 seconds.

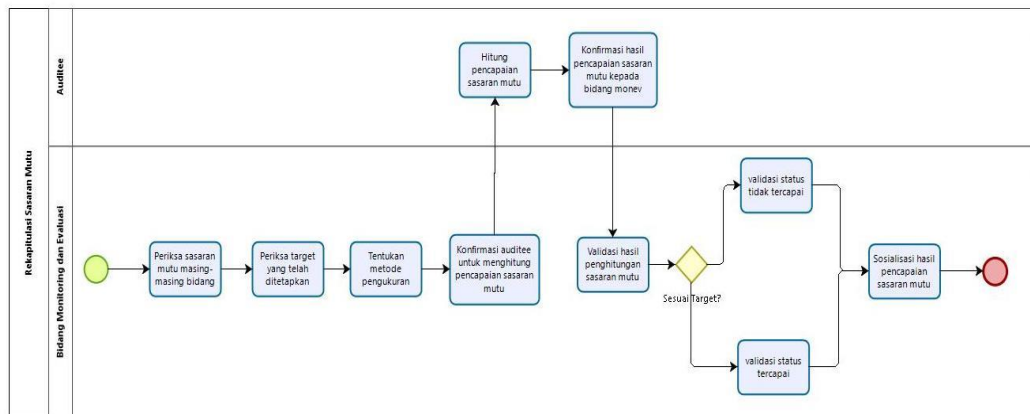


Figure 4. Current Business Process Model for Internal Quality Audit

3. RESULTS AND DISCUSSION

3.1 Identification of Business Process Problems

Based on the process of testing criteria using the Criteria Testing Matrix, it is found that four business processes will be improved, namely improving quality procedures, monitoring

work plans, conducting internal quality audits and recapitulating quality targets. The 4 processes have been identified and produce several problems which can be seen in Table 1.

Table 1 Problems in the Business Process

| 1. Business Process Improvement of Quality Procedures | | |
|---|--|---|
| No. | Problem | Risk |
| 1. | The process of confirming the description of changes in procedures that are still done manually by having to fill out the filing form for changing the procedure and must be signed directly by the auditee. | <ol style="list-style-type: none"> 1. Confirmation process that is done manually requires quite a long time because of the busyness of the auditee sometimes the field of monitoring and evaluation has to set aside a long enough time to get the right procedure changes. 2. Minor improvements that occur very frequently in procedures cause the field of monitoring and evaluation to make changes to procedures very often. |
| 2. Business Process Monitoring Work Plan | | |
| No. | Problem | Risk |
| 2. | The work plan monitoring process is still done manually in employee meetings | <ol style="list-style-type: none"> 1. When an employee meeting cannot be held because of certain obstacles, the monitoring process cannot be carried out either 2. The process of gathering physical evidence of findings is difficult because it must be directly asked to the auditee who sometimes has a lot of work |
| 3. Business Process of Internal Quality Audit Implementation | | |
| No. | Problem | Risk |
| 3. | The process of confirming the resulting audit findings must be done manually and repeatedly for each finding obtained. | <ol style="list-style-type: none"> 1. The time needed for the audit to be quite long because the confirmation process must be done manually 2. Requires a lot of paper because every finding must be written on the audit findings form |
| 4. Business Process Recapitulation of Quality Goals | | |
| No. | Problem | Risk |
| 4. | The process of confirming the calculation of quality objectives is still done manually | <ol style="list-style-type: none"> 1. The time required is quite long because the process of calculating the results of achieving quality objectives is done manually 2. The process of validating the results of achieving quality objectives carried out manually requires quite a long time. |

3.2 Business Process Improvement Analysis

After knowing the problems that occur in the current business processes, the authors try to provide recommendations for improvements to running business processes. The method that

will be used to improve business processes is the Business Process Improvement (BPI) Framework. Improvements made to adjust to the problems that occur.

Table 2 Business process improvement

| 1. Business Process Improvement of Quality Procedures | | | |
|---|---|--------------------------|---|
| No. | Problem | Repair Techniques | Information |
| 1 | The process of confirming the description of changes in procedures that are still done manually by having to fill out the filing form for changing the procedure and must be signed directly by the auditee | Automation | Filling in the procedure for filing changes to the system and can be validated directly by the auditee and given the facility of uploading proposed changes to the system so that it can save time |
| 2. Business Process Monitoring Work Plan | | | |
| 2 | The work plan monitoring process is still done manually in employee meetings | Automation | The proposed system will be able to provide notification when a corrected action plan has been exceeded and a facility to upload physical evidence is found |
| 3. Business Process of Internal Quality Audit Implementation | | | |
| 3 | The process of confirming the resulting audit findings must be done manually and repeatedly for each finding obtained. | Automation | Internal quality audit is carried out using a system that can record all findings and facilities available to validate the findings so that there is no need to spend a long time and paper less because writing on the forms of previous findings will be eliminated |
| 4. Business Process Recapitulation of Quality Goals | | | |
| 4 | The process of confirming the calculation of quality objectives is still done manually | Automation | The system to be created will be able to facilitate the process of calculating the achievement of quality objectives so that the manual counting process can be eliminated and can save time |

3.3 Proposed Business Process

After analyzing the improvement of business processes that will be proposed, then the writer re-modeling the business processes that will be proposed using Bizagi application. The proposed business process model can be seen in the figure below.

1. Business Process Improvement of Quality Procedures

Based on the results of simulations that have been done with Bizagi, the time of the activity is obtained from the average expectations and estimates of the authors. The results of business process simulation for the improvement of quality procedures proposed in carrying out the process require one day, 1 hour, 31 minutes, 15 seconds. The procedure is shown in Figure 5.

2. Business Process Monitoring Work Plan

Based on the results of simulations that have been done with Bizagi, the time of the activity is obtained from the average expectations and estimates of the authors. The results of the simulation of the business process monitoring of the proposed work plan in carrying out the process require 30 Minutes, 30 Seconds. The Business Process is show in Figure 6.

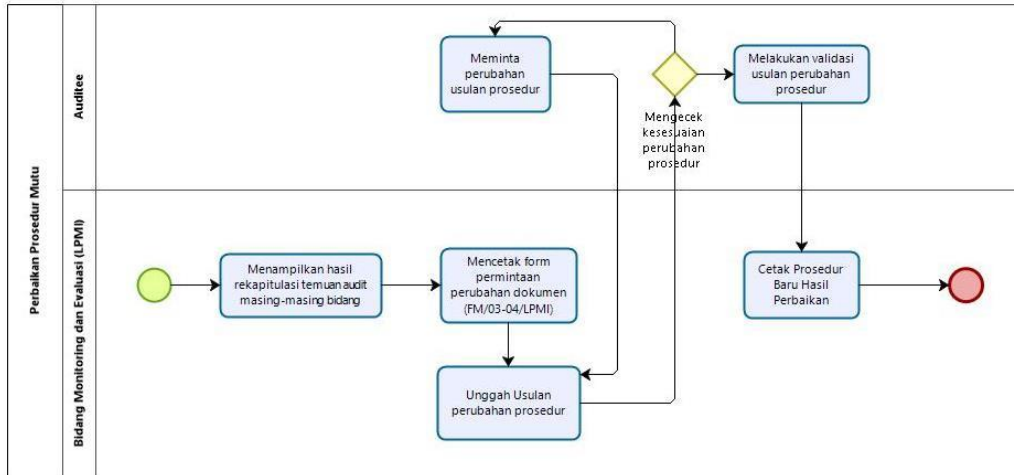


Figure 5 Business Process Model Proposed Quality Procedure Improvement

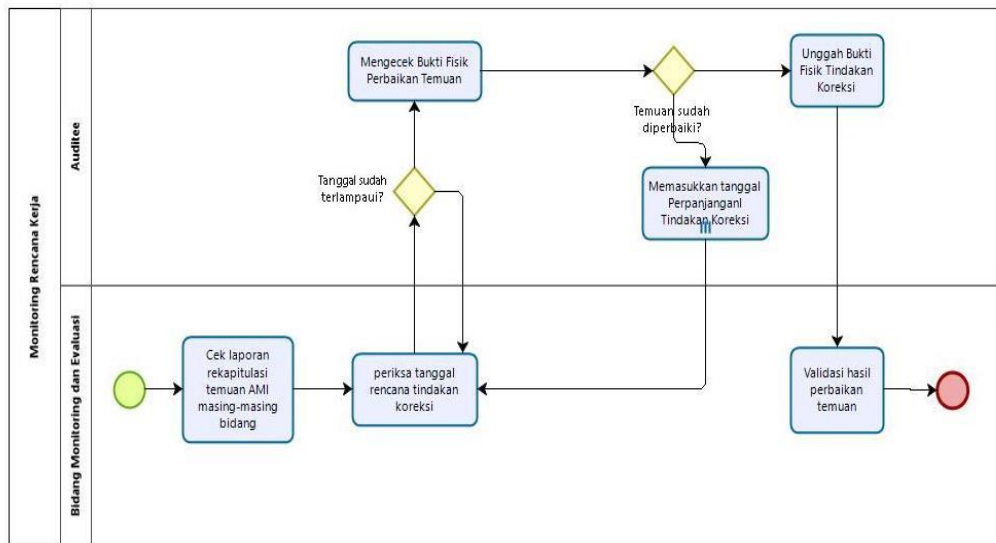


Figure 6 Business Process Model Monitoring Proposed Work Plan

3. Business Process of Internal Quality Audit Implementation

Based on the results of simulations that have been done with Bizagi, the time of the activity is obtained from the average expectations and estimates of the authors. The results of the business process simulation of the internal quality audit proposed in carrying out the process require 2 hours, 48 minutes, 30 seconds. The Business Process is show in Figure 7.

4. Business Process Recapitulation of Quality Goals

Based on the results of simulations that have been done with Bizagi, the time of the activity is obtained from the average expectations and estimates of the authors. The

results of the business process simulation of the internal quality audit proposed to carry out the process take 28 minutes. Recapitulation of Quality Goals is show in Figure 8

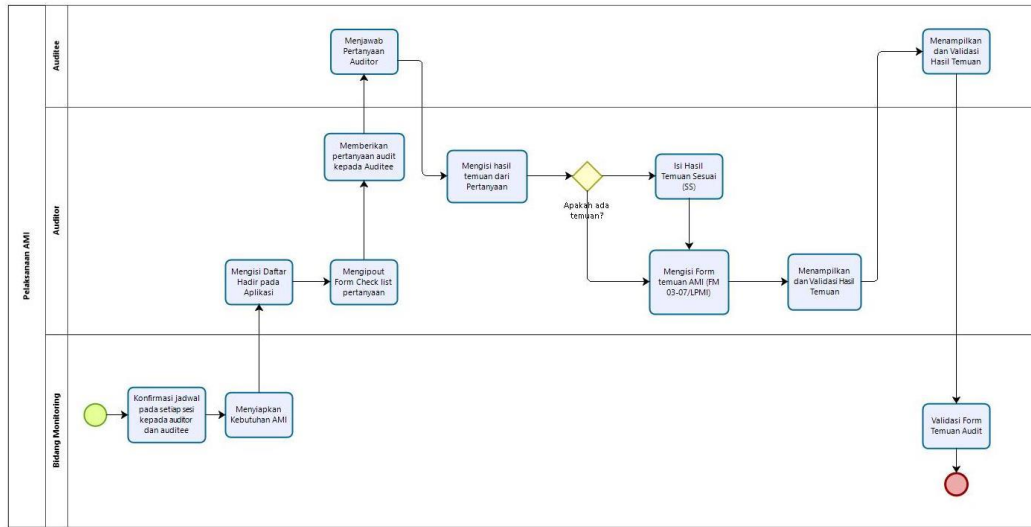


Figure 7 Proposed Business Process Internal Audit Quality Process Model

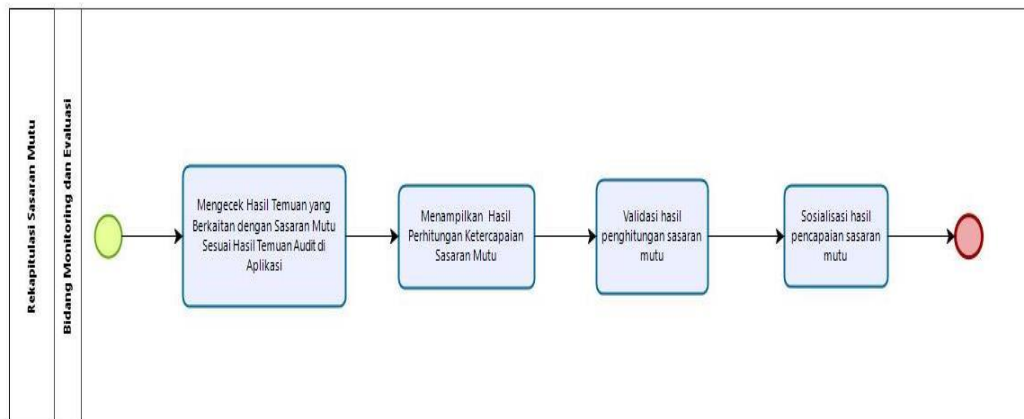


Figure 8 Business Process Model Recapitulation of Proposed Quality Goals

3.4 Comparison of Current Business Process Simulation Results with Proposed Business Processes

The results of the comparison of the time of the results of the simulation of current business processes with the proposed business processes can be seen in Table 3.

Table 3 Results of comparison of current running time processes and proposed business processes

| Business Process Name | Current Business Process Time | Proposed business process time | Difference in time |
|---|--------------------------------------|-------------------------------------|-------------------------------------|
| Business Process Improvement of Quality Procedures | 6 day, 10 hour, 46 Minute, 26 Second | 1 Day, 1 Hour, 31 Minute, 15 Second | 5 Day, 9 Hour, 15 Minute, 11 Second |
| Business Process Monitoring Work Plan | 18 Hour, 57 Minute, 5 Second | 30 Minute, 30 Second | 18 Hour, 27 Minute, 25 Second |
| Business Process of Internal Quality Audit Implementation | 1 Day, 5 Hour, 46 Minute, 45 Second | 2 Hour, 48 Minute, 30 Second | 1 Day, 4 Hour, 2 Minute, 15 Second |

| | | | |
|--|------------------------------|-----------|-----------------------------|
| Business Process Recapitulation of Quality Goals | 15 Day, 4 Hour, 20 Minute | 28 Minute | 15 Day, 4 Hour, 8 Minute |
|--|------------------------------|-----------|-----------------------------|

Table 3 shows the decrease in time in the proposed business process. A reduction in processing time indicates that improvements made can help the implementation process faster.

4. CONCLUSION

There are 4 business processes in the implementation of the Internal Quality Audit (AMI) of STMIK STIKOM Indonesia, which were carried out improvements, namely improvement of quality procedures, monitoring of work plans, implementation of internal quality audits and calculation of quality objectives, with the results of time simulation produced using the bizagi application is a procedure improvement quality with time of 6 days, 10 hours, 46 minutes, 26 seconds, monitoring work plan with time of 18 hours, 57 minutes, 5 seconds, conducting an internal quality audit within 1 day, 5 hours, 46 minutes, 45 seconds and recapitulation of quality objectives within 15 Days, 4 Hours, 20 Minutes.

Based on the analysis process that has been done there are several problems in the current business processes. Business process improvement is done by using Framework's Business Process Improvement (BPI) and producing time simulation results in the business process improvement of quality procedures is 1 day, 1 hour, 31 minutes, 15 seconds, monitoring the work plan with 30 minutes, 30 seconds, audit implementation internal quality with a time of 2 hours, 48 minutes, 30 seconds, and finally the business process is a recapitulation of quality objectives with a time of 28 minutes.

The results of a comparison of current process simulations and proposed business processes show that improvements to business processes are running well and can speed up implementation time. The business process of improving quality procedures has decreased time by 5 days, 9 hours, 15 minutes, 11 seconds, monitoring work plans has decreased time by 18 hours, 27 minutes, 25 seconds, the implementation of internal quality audits has decreased by 1 day, 4 hours, 2 Minutes, 15 Seconds and the recapitulation of quality objectives has decreased by 15 Days, 4 Hours, 8 Minutes

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