

BUSINESS PROCESS ANALYSIS OF ACADEMIC SYSTEM USING BUSINESS PROCESS MODELING NOTATION AT STMIK STIKOM INDONESIA

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ABSTRACT

STMIK STIKOM Indonesia has implemented the standards set by the government in the management of higher education, one of which is the international standard ISO-9001. In these standards, procedures contained in the management of higher education, limited access to and understanding of the content of university management procedures as well as the form of text-based procedure was judged to be the cause of incomprehension stakeholders resulting in the ineffectiveness of the established procedure. One attempt to solve this problem is to construct a form of media that can be accessed and understood by stakeholders. The media can be a graphical representation in the form of a diagram that can tell the content of the procedure. Based on the results of the analysis showed that the procedure has not been carried out properly so it needs to be improved overall business processes. Modeling using BPMN be the perfect solution to represent a business process flow.

Keywords: BPMN, Business, Process, Procedure, ISO-9001:2008

1. INTRODUCTION

University as an educational institution that organizes learning activities for people who want higher education. In college management refers to the standards set by the government. STMIK STIKOM Indonesia (STIKI) as one of the private universities in Bali has implemented the standards set by the government, as evidenced by obtaining accredited status. In carrying out its management, in addition to the standard set by the government, STIKI also uses international standards such as ISO-9001: 2008.

In those standards, contained in the management procedures starting from academic colleges, keuangan, the facility to research and community service. The procedure documents in the form of text with a common language. Currently the procedure document can only be accessed by the authorities, such as the head of each division. It often leads to a misperception of the stakeholders (stakeholders). Limited access and understanding of the content of university management procedures as well as the form of text-based procedures judged to be the cause of incomprehension stakeholders resulted in the ineffectiveness of the established procedure.

Governance good college is not enough merely expressed in a procedure. The problem is more fundamental is how the procedure is carried out, so as to achieve a good university management in accordance with established standards. One that can be improved is by constructing a form of media that can be accessed and understood by stakeholders. The media can be a graphical representation of a diagram that can tell the shape of the contents of the procedure. With the realization of a media that can be understood together, are expected to procedures work well and can be improved on an ongoing basis.

2. BASIC THEORY

2.1 Business Process

The business process is a combination of interrelated activities within a company to produce a certain service to the clients. [1] A business process is a structured activity to produce a specific output for a customer or

market. [2] A business process is a series of activities aimed to achieve organizational goals. A business process may consist of several activities. Event (event) is a single activity contained in a business process [3].

2.2 Business Process Management (BPM)

Business Process Management (BPM) is a discipline to model, automate, manage, and optimize business processes to improve profitability. [4]. Business processes are referred to in the definition of BPM include information technology systems and human interaction. [5]

The business process itself is defined as a series of unstructured or semi-structured activities that are carried out in a set or by two or more individuals to achieve a common goal. There are five essential points of this definition [4]:

1. The business process consists of a set by a task (work). One task can not be categorized into business processes.
2. Business process was structured or semi-structured. This means that there is a set of logic or rules that regulate the activity keterurutan. Activities are not run an ad hoc basis.
3. Task can appear in serial or parallel.
4. There must be at least two or more individuals or applications involved as a player in performing different tasks for a process.
5. A set of tasks should have a goal, so it can be assessed for subsequent optimization to see the success of achieving the goal or not.

2.3 Business Process Modelling Notation (BPMN)

Business Process Modeling Notation (BPMN) is a modeling standard for web service and web service process, which was initiated by the Business Process Management Initiative (BPMI). [6] BPMN consists of a diagram, namely Business Process Diagram (BPD). The purpose of this diagram is that the business processes can be easily understood and can be difficult to model business processes.

BPMN diagram consists of elements. These elements are divided into four categories, namely Flow Objects, Connecting Objects, Swimlanes, and artifacts.

1. Flow Object, consisting of:
 - a. Event is represented in the form of a circle and explain what happened then. There are three types of event, ie start, intermediate, and end. Each of these events represents the commencement of business processes, business process interruptions, and the end of the business process.
 - b. Activity represents the work (task) to be solved. There are four kinds of activity, namely the task, looping task, sub-process, and looping subprocess.
 - c. Gateway solution represents groove contained in the business process. There are various gateways, namely the exclusive data is based, exclusive event-based, inclusive event-based, and parallel.
2. Connecting Object, consisting of
 - a. Sequence flow, represents the default choice for running processes
 - b. Message flow, represents the flow of messages between processes
 - c. Association, used to connect elements of the artifact
3. Swimlanes. This element is used to visually categorize all elements in the diagram. There are two types of swimlanes, the pool and the lane. The difference is situated in the inner lane pool to categorize the elements in the pool to be more specific.
4. Artifacts. This element is used to give an explanation on the diagram. This element consists of three types, namely:
 - a. Data object, is used to describe what data is needed in the process
 - b. Group, to group a number of activities in the process without affecting the running process
 - c. Annotation, is used to note that the diagram is easier to understand

2.4 Education Management

Education Management is a process or management system. Management education as a process or a system of organization and human promotion in relation to an educational system. Management activities in an educational system aimed at adherence to good teaching and learning process, which includes:

1. The program curriculum includes administration curriculum, delivery methods, the evaluation system, the guidance system.

2. Program workforce.
3. Program the procurement and maintenance of facilities and educational tools.
4. Program financing.
5. Program the relationship with the community

3. RESEARCH METHODOLOGY

3.1 Research Flow

The study was conducted by analyzing and designing a concept of knowledge management in STMIK STIKOM Indonesia. This study is divided into several steps that can be seen in Figure 1 below:



Figure 1. Research Flow

3. TABLES AND FIGURES

Figures should be labeled with "Figure" and tables with "Table" and should be numbered sequentially, for example, Figure 1, Figure 2 and so on (refer to table 1 and figure 1). The figure numbers and titles should be placed below the figures, and the table numbers and titles should be placed on top of the tables. The title should be placed in the middle of the page between the left and right margins. Tables, illustrations and the corresponding text should be placed on the same page as far as possible. Otherwise they may be placed on the immediate following page.

3.2 Academic System Overview

The academic system in STMIK STIKOM Indonesia includes eight (8) pieces procedures are compiled and maintained by the Vice Chairman 1 (PK1), Vice Chairman 3 (PK3), Head of Study Program (Prodi) Information Engineering and Computer Systems, Secretary of the Engineering Department of Information and Systems computers and Academic Supervisor. The procedures used in this Academic System include lectures procedures, curriculum review procedures, academic guidance procedures, graduated and graduation procedures, dropped out procedures, thesis procedures, practical work procedures, and student scholarships procedure.

3.3 BPMN Diagram

The diagram is based on documents procedure means any procedure there can be more than one business process, but there is also a procedure that there is only one business process.

3.3.1 Lecture Procedure

In the lecture procedure there are 4 (four) business processes, namely Planning Class Business Process, Study Plan Business Process, Class Business Processes, and Class Assessment Business Process.

1. Planning Class Business Process

Planning business process starts from PK1 arrange lectures the academic calendar will then set out a list of subjects and their schedule. Furthermore PK1 will set lecturers for each course. After that Prodi is responsible for setting the course coordinator. Once the coordinator of the course is set, then Prodi will issue a decree (SK) lecturer of the course. Once the entire process is carried out, the last academic meeting will be held by Prodi. Business Process Planning Class can be seen in Figure 2.

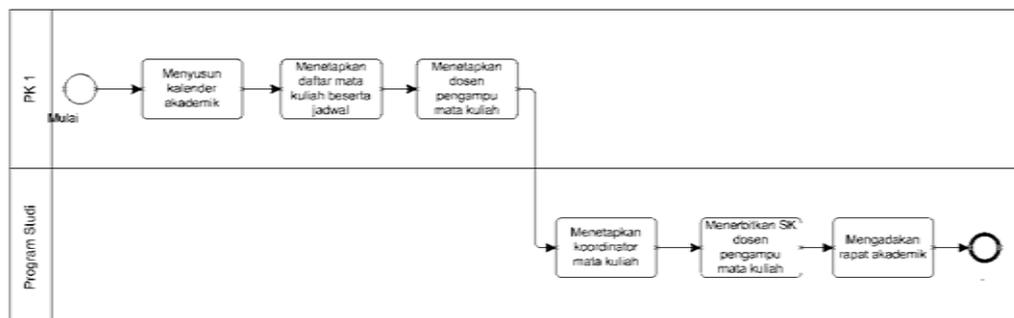


Figure 2. Planning Class Business Process

2. Study Plan Business Procces

Study Plan Business Process starting from the student takes the form of charging Study Plan Card (KRS) at the Academic Administration (BAAK). Furthermore, students will conduct the counseling process or consult with the Academic Advisor (PA) by showing Card Study Results (KHS). If the counseling process for preparing KRS is complete then Lecturer PA will sign cards academic guidance. The next process will fill KRS student in the laboratory in accordance with the selected schedule. Furthermore, students will make the process of payment of tuition fees by the Bank or the Front Office (FO). Proof of payment obtained will be handed over to students validated in FO. Next BAAK will print KRS students. KRS already printed will be handed to each lecturer PA to be signed. Once restored to BAAK, students will take the KRS (white sheets) which has been signed. The latter process BAAK will archive a copy of the KRS (sheet of yellow and red). Business Process Study Plan can be seen in Figure 3.

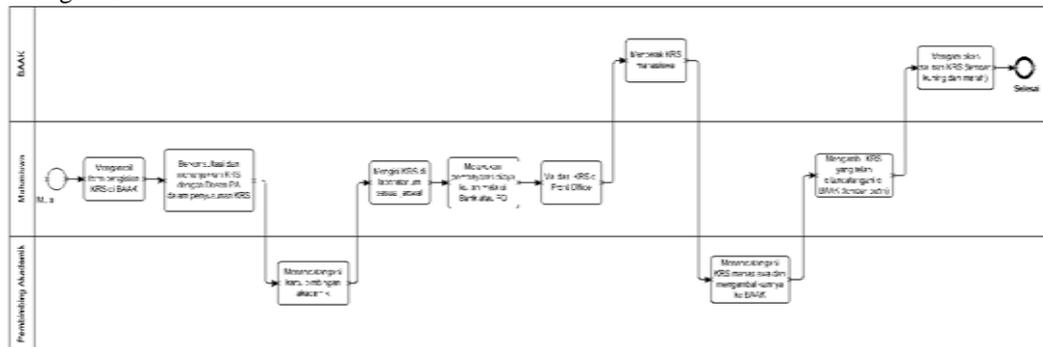


Figure 3. Study Plan Business Process

3. Class Business Process

The process starts from BAAK contact lecturers Course (MK) to remind lecture schedules. If the first meeting of the lecturer of the Court was unable to attend the BAAK will assign Fulltime replace, if not absent, the lecturer of the Court who will be teaching. Furthermore BAAK will note the presence of a lecturer in the Lecturer Attendance Confirmation Form. MK lecturers will retrieve and restore the presence, the value of the activity academic and teaching materials in BAAK recapitulation. After dikembalikan, recapitulation form of teaching materials will be verified by BAAK by giving initials. In a certain period Prodi will verify conformity with the teaching recapitulation Events Unit Class (SAP). Every week BAAK will check the presence of lecturers, if the professor is absent more than two (2) times in a row it will be reported to Prodi. Prodi any given period will be distributing questionnaires lecturers to students. Terkhir process is Prodi will recapitulate and report the results of a questionnaire to dilaporkan to the Institute of Internal Quality Assurance (LPMI). Business Process Class Plan can be seen in Figure 4.

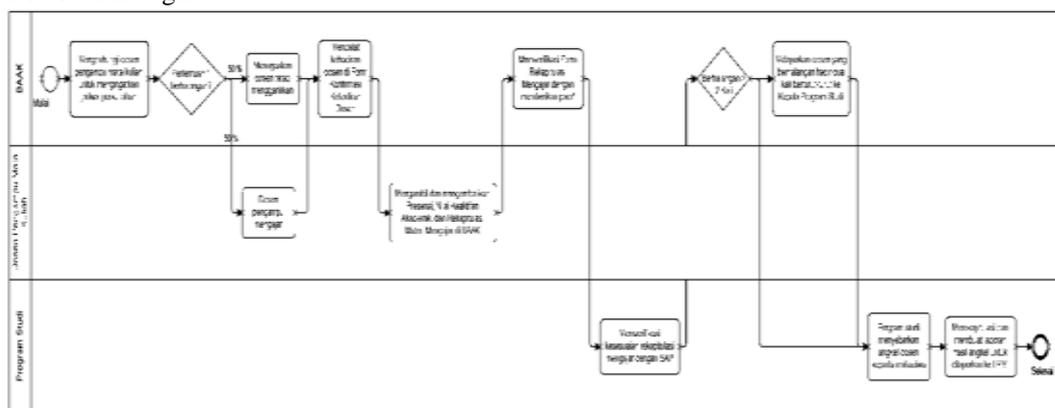


Figure 4. Class Business Process

4. Class Assesment Business Process

The process starts from lecturers MK evaluate UTS and UAS, if the UTS is smaller than 60 (sixty) will be held remidi UTS. Furthermore, MK lecturers will fill out the form recapitulation final value and collect value to BAAK. The latter process BAAK will report the results of studies of students to parents or guardians concerned.

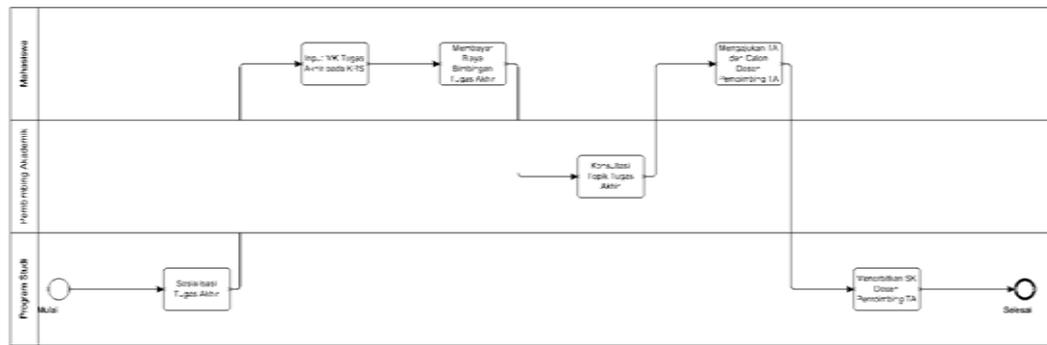


Figure 11. Thesis Socialization Business Process

2. Thesis Seminar Business Process

The process starts from the student conduct seminars proposal submission Final (TA). There are two possibilities when the TA proposal submission seminar, the first if the student is less than five times the seminar proposal, the student must fulfill the obligation to attend the seminar proposal to which is five times the minimum requirement. Secondly if the requirements are met, students will gather TA proposal document. Furthermore, Prodi will set the schedule and testers seminar TA proposal. When the schedule and testers has been determined, students will gather participants and the minutes of the seminar. The next process is the implementation of the proposal seminar and followed by a seminar proposal revision process. There are two conditions to the proposed revisions, the first if it is not approved then the process is repeated at the beginning of the process of submission of the proposal seminar TA. Secondly if the revision is approved, then the student will continue keproses workmanship TA. Business Process Seminar Final can be seen in Figure 12.

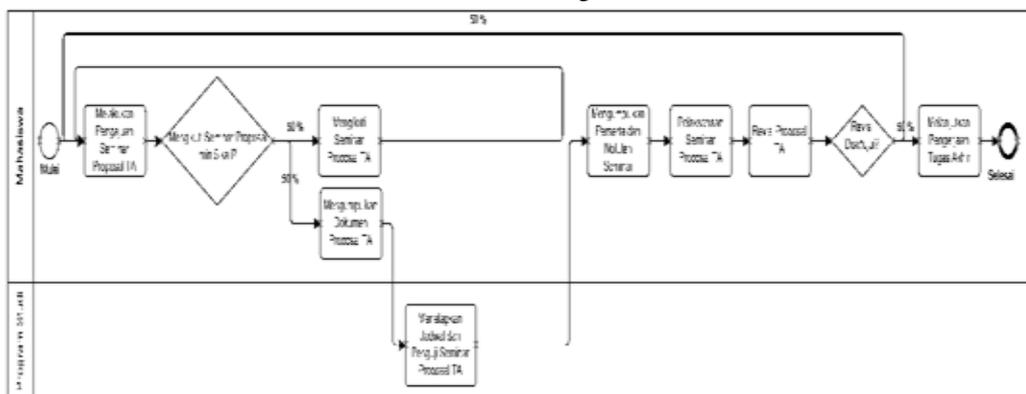


Figure 12. Thesis Seminar Business Process

3. Thesis Assembly Business Process

The process starts from Students doing Final guidance (TA). Furthermore, students will conduct the hearing submission TA. After receiving the submission of Students, Prodi will set a schedule for the TA session. When the schedule is set, students will gather participants open session TA and TA to exercise session. There are two possibilities, if not pass, the students will return from its initial submission process hearing TA. If passed, students will seek approval from the board of examiners TA. Furthermore, Prodi will provide attestation reports on TA and the final process Students will undertake to collect reports on TA. Business Process Final Assembly can be seen in Figure 13.

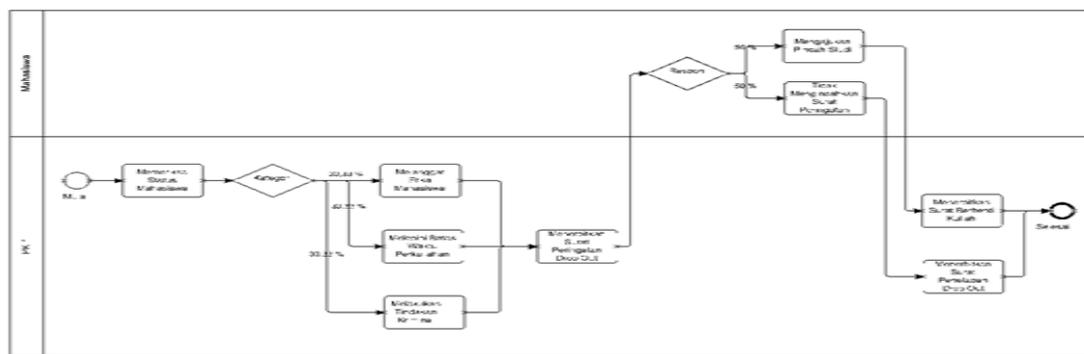


Figure 16.

Drop Out Business Process

4 ANALYSIS AND DISCUSSION

4.1 Analysis of Lecture Procedure

On lectures planning business process, the existing constraints on the availability of resources is a lecturer of the course that it is still lacking. Determination coordinator of the courses have been conducted, but the monitoring process to be done coordinator has not span the 'hierarchy in a procedure or a business process. For the process of issuance of the Decree (SK) lecturer of the course has not done well, because it has not distributed to each of the lecturers concerned.

For business process study plans there are still some obstacles. The main obstacle is that the planning process studies done by the students are not yet integrated into a computerized system. In the process of guidance documentation process is done manually so error prone. In the process of filling the Study Plan Card (KRS) students must come to the laboratory, the process can be made more efficient by building a system of online KRS.

Business processes lectures there are few constraints on the deployment process and filling the questionnaire lecturers to students who are still done manually. This process is not very efficient because when the questionnaire has been filled, must recapitulate the whole questionnaire that amounted to hundreds of copies. If done manually, it is an obstacle for the study program.

Lectures on business process assessment there is no significant obstacles. But the process of reporting the study results can be created for a system that can be accessed in real time either by the student or parent.

4.2 Analysis of Curriculum Review Procedure

In the curriculum review procedure there is only one business process. Constraints on business processes are in practice. Implementation of this procedure has been performed once. However, implementation is still not running multiple processes set forth in the procedure. The formation process and the publication of the assignment to the Team SK curriculum has not been implemented. The results of the analysis, review and recommendation of the Curriculum Team is also not well documented. It can be said the curriculum review process that has been done does not refer to existing procedures.

4.3 Analysis of Procedures for Academic Mentoring

Procedures academic coaching there is only one business process. Constraints on business processes are in the process of determining faculty Academic Advisors (PA) conducted by the Vice Chairman 1 (PK1) and publishing SK carried out by the study program (Prodi). Necessary coordination was very good considering it is possible to turn the PA on a temporary or permanent. If coordination is done bad will happen mismatches of data resulting ineffectiveness of the procedure properly. The socialization process performed by the Secretary Prodi should also be conducted beginning of each academic year to prevent non-performance of business processes based on the course of the procedure.

4.4 Analysis of Scholarship Procedure

In the procedure student scholarships, there are two business processes, including: business process scholarship scholarships internal and external business processes. In the business process of internal scholarships must be reviewed and corrected. Business process flows that do not contain the flow and clear rules.

On the external scholarship business processes need to be reviewed and corrected. There is a very important engagement of the Institute for Research and Community Service STIKI (LPPM) on the business process. In the procedure LPPM commissioned to gather information about the program by an external party, but the overall implementation conducted by the Vice Chair 3 (PK3). In the procedure is also not there is a process that requires

documentation and publishing and storage of evidence must be done by anyone. If there are problems in the selection process, execution, disbursement and reporting shall be known who is responsible for problems that occur.

4.2 Analysis of Practical Work Procedure

Practical Work Procedures (KP) there is only one business process. Overall it can be said there are no significant problems in the implementation of the business process. Problems sometimes occur only in the process of implementation of the KP. The procedure can be reconsidered because in practice it often happens constraints in the implementation of the KP. In the procedure does not require students to do the counseling process with the supervisor responsible for the implementation of the KP. It can be said to be the cause of the KP report which rated poorly or even can not be solved by the students.

4.3 Analysis of Thesis Procedure

Thesis Procedures (TA) there are three business processes, including: business process of TA socialization, TA seminar business processes and TA assembly business process. In the business process of socialization TA there are no constraints other than the limited resources of the supervisor TA that is not commensurate with the number of students who apply for TA. TA seminar on business process needs to be reviewed and corrected. After the seminar there should FY checking the status of the results of the seminar. Status in question were approved without revision, approved with revisions, or not approved. So not all of the proposals that the seminar will be revised, conditions are imposed on the seminar and the decisions of the board of examiners.

Overall business processes need to be modified to reflect its implementation. In the business process hearing TA yet undefined business processes in accordance with its implementation. Supposedly element TA supervisor and board of examiners included in the interaction in the business process. It is considering the important role these two elements in running the business process hearing TA.

4.4 Analysis of Graduated and Graduation Procedure

In yudisium and graduation procedures, there are two business processes, including: yudisium business processes and business processes graduation. In yudisium business process implementation is in accordance with the procedure. For business processes graduation has not been illustrated clearly in the procedure. There are processes that are not described as administrative processes, payment processing, toga-making process and the process of rehearsal prior to graduation. The process of formation of the graduation committee by Vice Chairman 1 (PK1) is also no evidence that a valid and clear documentation. The process of making Accountability Reports are submitted to the Chairman STIKI graduation committee should be involved as executor activity. Based on this it can be said graduation business processes need to be reviewed and revised to be implemented properly and responsibly.

4.5 Analysis of Drop Out Procedure

Drop Out Procedure (DO) has only one business process. In this business process has not been accomplished in accordance with the procedure and need to be reviewed and corrected. The inspection process is in the category of student status DO (unethical students, exceeding the time limit lectures, a criminal act) should involve the study program (Prodi) and lecturer Academic Advisors (PA). The process of issuance of warning letters DO and feedback obtained has not been disseminated and implemented in accordance with the procedure directives. Overall the necessary involvement of some elements which become stakeholders (Prodi and PA) in the implementation of this procedure.

Business process modeling is done using the Business Process Modeling Notation (BPMN) can make it easier to explain the existing business process flows. Once modeled properly, can be analyzed process weaknesses and opportunities for improvement that can be done. Based on the analysis and discussion that has been described, it can be said as a whole needs to be improved business processes contained in a procedure. Some things that have been described stating the procedure has not been implemented properly. Stakeholders in implementing any business processes contained in procedures often do not heed the flow of the set. One that can be said to be the cause is, document procedures to guide the implementation of business processes elusive in the form of a written narrative. Modeling using BPMN be the perfect solution to represent a business process flows and can be used to analyze in depth.

5. CONCLUSION

Based on research conducted through interviews, data collection, modeling and analysis can be concluded that the Business Process Modeling Notation (BPMN) with the notations easy to understand can be used to model academic system business processes that exist in the STMIK STIKOM Indonesia. Business process flows in the form of a written narrative complicate understanding of system elements in the implementation of the procedure. By using

BPMN can clarify the flow of each business process to be analyzed the problem and the solution can be given. The procedures that exist in the academic system needs to be reviewed and modified to reflect its implementation and colleges management good practices in accordance with government standards and ISO 9001: 2008.

REFERENCES

- [1] Leyman, F & Altenhuber, W. 1994. *Managing Business Process as an Information Resources*. IBM Systems Vol 33 No. 3, pp.326-348.
- [2] Davenport, T.H. 1993. *Process Inovation : Reengineering Work Through Information Technology*. Boston, MA: Havard Business Press
- [3] Sarvia, Elty. 2008. *Pengembangan Model Evaluasi Kuantitatif Perbaikan Proses Bisnis Dengan Tujuan Ganda*. Tesis. Bandung : Institut Teknologi Bandung
- [4] Adipradana, Brahmasta. 2008. *Penerapan Business Process Management Dalam Service-Oriented Architecture*. Tesis. Bandung : Institut Teknologi Bandung
- [5] Newcomer, Eric Dan Lomow, Greg, 2004. *Understanding Soa With Web Services*. Addison Wesley Professional
- [6] Owen. Martin, dan Raj. Jog. .2006. *BPMN and Business Process Management Telelogic White Paper*, http://www.omg.org/bpmn/Documents/6AD5D16960.BPMN_and_BPM.pdf

