Evaluation and Redesign of Semester Learning Plan to Improve the Effectiveness Business Process (Case Study: Telkom University)

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Abstract— Telkom University is a private educational institution that implements an academic portal called iGracias to serve the needs of students, lecturers, employees, and parents/guardians of students, especially in providing campus information quickly and widely and up-to-date. One of the most important processes in iGracias is the Semester Learning Plan process, from managing the PLO Master to managing the Detailed RPS approval. Based on 2020 data obtained from the PuTI (Information Technology Center) Telkom University, there were 1931 access logs on iGracias related to the Semester Preparation Plan process in the Information Systems study program at Telkom University. Seeing this, it is necessary to analyze and improve the Semester Learning Plan process so that it can increase the effectiveness of time and activities in the process. This redesign process uses the Business Process Model and Notation (BPMN) and the Bizagi Application as a simulation tool for both existing business processes and targeted business processes. From the simulation, the time required for existing business processes is 109948.2678 hours with a total of 12 activities. While the targeting business process resulted in only 42791.07528 hours to complete 11 activities.

Keywords—i-Gracias, Semester Learning Plan, Process Redesign

I. INTRODUCTION

Telkom University is a privately owned educational institution located in Bandung Regency, West Java. This university has various ways to serve the needs of students, lecturers, staff and parents/guardians of students, one of which is the i-Gracias academic portal. Each user can access by using Single Sign On (SSO) which is given with different access rights. This academic portal can provide broad, quality information and can help students, lecturers, staff and parents/guardians of students in obtaining the latest information about lecture activities. Academic portals that are owned by an organization, especially Telkom University, still have weaknesses which can later cause all activities related to academics to be hampered. Therefore, this academic portal must be developed and always made improvements, especially in the business process flow so that the i-Gracias academic portal can work optimally and effectively.

Based on research conducted by Dwivedia et al. (2012) said that the quality of information can have a significant and positive effect on user satisfaction on the information system used. Service quality is something that users get from the results of using information systems. The higher the quality of services provided by an information system, it will increase user satisfaction. If the user is satisfied with the services provided, then the user will feel satisfied in using the system. Service quality itself is the overall support delivered by information system developers to users by providing security and comfort assurance, empathy, and responsiveness in meeting user expectations (DeLone & McLean, 2003).

User satisfaction is a response from users of information systems regarding the performance of the information system, whether the information system is in accordance with user needs or not. Users are satisfied when their needs for information systems are met. So that user satisfaction is an important benchmark in knowing the success of the information system. An information system can be said to be successful when it is able to assist users in meeting their needs.

To get user satisfaction, of course, it is necessary to first measure the current conditions, then analyze the development of an i-Gracias information system. With the analysis and determination of solutions, it can maximize the quality of i-Gracias in conveying information to users and can obtain better customer satisfaction, especially in the Semester Learning Plan (RPS) business process. Process redesign of the RPS business process is one way to get satisfaction and maximize the quality of the RPS business process so that it can convey information to users properly and optimally. Then the results obtained are the results of the proposed business process based on the results of the GAP analysis between the existing business processes and the targeting business process as the proposed business process.

By implementing a process redesign, in addition to getting user satisfaction, especially in the RPS business process, of course there are various other benefits including being able to improve the capabilities of existing business processes by eliminating or repairing errors, making the business process flow easier and more enjoyable for users to run business processes. (Andres & Stalick, 1994)

In this study, the author will do a process redesign using the Business Process Model and Notation (BPMN) Diagram. This modeling is carried out using the Bizagi Application which includes the activity flow, the actors involved, and the time required to complete each activity.

II. LITERATURE REVIEW

A. Academic Information System

Academic information system is a resource related to everything in the form of information related to academic
problems. In addition, academic information systems can also be used as a means of communication between anyone in the environment.

The academic information system itself is a system that is built in a single unit which is mutually integrated and has interrelationships between one another. In this case, everything related to academics is a relationship that is in the academic activity itself, both learning and teaching activities in which there are various users, both teachers, students, principals and all school staff (Zainal, 2002).

B. OBE Application

The OBE (Outcome Based Education) application is a development application from the iGadis application that makes it easy for users to input grades by implementing a CLO (Course Learning Outcome)-based assessment system. This application was built with the aim of managing PLO (Learning Outcome Program), CLO mapping, management of assessment tools, management of questions, management of value input and measuring PLO and CLO achievements (Directorate of Information Technology Center Telkom University, 2020).

C. Semester Learning Process

The semester learning plan is determined and developed by the lectures independently or together in a group of expertise in a field of science and/or technology in the study program. Semester Learning Plan is a learning planning document that is prepared as a guide for students in carrying out lecture activities for one semester to achieve predetermined learning outcomes. (Permendikbud 2014).

D. Business Process Reengineering

Business Process Reengineering is a process of redesigning business processes to improve performance (Wiyono, 2016). In Nasution's research (2010), entitled "Business Process Reengineering to Achieve Simplifying the Airlines Business" The definition of business process reengineering is the process of rethinking and redesigning fundamentally. to obtain a satisfactory improvement on the company's performance which includes cost, quality, delivery, service, and speed with accuracy or contemporary measurements.

E. Stages of Process Reengineering

Nasution's research (2010), entitled "Business Process Reengineering to Achieving Simplifying the Airlines Business" The basic stages in business process reengineering consist of the 3Rs, which are as follows:

1. Rethink

Rethink the goals to be achieved now with the assumptions needed to determine whether these goals can still be used in new commitments to meet customer satisfaction in the future.

2. Redesign

Includes an analysis of how the organization produces goods or services, how it works, who completes a particular task and what results are achieved from each of these procedures.

3. Retool

Includes an evaluation of the benefits derived from the technology used, especially in electronic word and data processing systems to determine the possibility of changing the technology to improve its quality.

III. METHODOLOGY

The following is a set of activities carried out in conducting the research process.

1. Study of Literature

Conducting literature studies to study theories as the basis for making research.

2. Data Collection

At this stage, data collection related to the RPS I-Gracias Telkom University process is carried out.

3. Identification of Business Processes Existing (as-is)

Identifying business processes that are currently running in the form of activity flows and who is involved in these activities.

4. Modeling of Business Process Existing (as-is)

At this stage, business process modeling is carried out in accordance with the results of the identification of business processes that have been carried out using the Business Process Model and Notation (BPMN) Diagram. This modeling is carried out using the Bizagi Application which includes the activity flow, the actors involved, and the time required to complete each activity.

5. Analysis and Evaluation of Business Process Existing

At this stage, analysis and identification of business processes that are already running are carried out, as well as identifying the data required by the system. Furthermore, business process evaluation is carried out as a business process recommendation (to-be) so that business processes can run more effectively and efficiently.


At this stage, modeling of business process improvement proposals (Improvement) is carried out based on the business process recommendations that have been carried out. This modeling is done using BPMN diagrams in the form of activity flow, actors involved, and time required to complete each activity.

7. Business Process Simulation

At this stage, the current business process (as-is) and recommendation (to-be) business processes are simulated using the Bizagi Application.

8. Business Process Comparison

At this stage, a comparison is made on the two business processes to find out how much improvement and other effects of the proposed improvements are made.

9. Conclusions and Suggestions

At this stage, conclusions are drawn based on the results of the analysis and evaluation of business processes that have been carried out. Then proceed with providing suggestions in the form of recommendations for improving business processes to improve business processes that are currently running.

IV. RESULT AND DISCUSSION

There is a data that support this research. Data regarding the time obtained from the data mining activity logs of lecturer’s activity at iGracias

Data Based on Event Log (Data Mining)
The data listed below is the result of data mining on activity logs using iGracias carried out by lectures. The data is also sorted by process “Semester Learning Plan” from Telkom University. Time Data

<table>
<thead>
<tr>
<th>Actor</th>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of the Study Program</td>
<td>Manage PLO Master</td>
<td>54 mins 51 secs</td>
</tr>
<tr>
<td></td>
<td>Manage Component</td>
<td>37 secs</td>
</tr>
<tr>
<td></td>
<td>Manage Subject</td>
<td>38 secs</td>
</tr>
<tr>
<td></td>
<td>Manage PLO</td>
<td>2 mins 32 secs</td>
</tr>
<tr>
<td></td>
<td>Manage Approval CLO</td>
<td>1 day 21 hrs</td>
</tr>
<tr>
<td></td>
<td>Manage Approval Semester</td>
<td>13 days 13 hrs</td>
</tr>
<tr>
<td></td>
<td>Learning Plan Details</td>
<td>15 secs</td>
</tr>
<tr>
<td>Subject Coordinator</td>
<td>Manage CLO Course</td>
<td>2 mins 45 secs</td>
</tr>
<tr>
<td></td>
<td>Manage Tools Assessment</td>
<td>38 mins 55 secs</td>
</tr>
<tr>
<td></td>
<td>Mapping CLO</td>
<td>21 secs</td>
</tr>
<tr>
<td></td>
<td>Views Course Subject Coordinator</td>
<td>3 days 21 hrs</td>
</tr>
<tr>
<td></td>
<td>Manage Teaching Semester</td>
<td>14 hrs 5 mins</td>
</tr>
</tbody>
</table>

The activities above are described from the Semester Learning Plan by Telkom University. The time of each activity in this process is the average of the event logs carried out by the lecturer obtained from PuTI.

V. ANALYSIS

From this data, it can be seen the sequence of business process activities in the Semester Learning Plan at Telkom University and the total time for each activity. We can analyze existing business processes and describe them in Bizagi Modeler.

The existing business processes are business processes that are currently being run at Telkom University. This existing business process contains the semester learning plan process at iGracias. The following describes the existing business processes using the Bizagi Modeler.

![Figure 1. Semester Learning Plan Business Process Existing](image1)

This process begins with the Head of Study Program managing the PLO Master with the output of the PLO Master Data. Then proceed with managing components. Next, the head of study program manages the courses, then manages the PLO. After that, the course coordinator manages the CLO Course, followed by managing assessment tools with the output of data assessment tools. Then check by looking at the course subject coordinator. If you don’t check, the course coordinator will map the CLO with the output of the clo mapping data. Then the head of study program manages the CLO approval. Followed by the course coordinator views course subject coordinator. If it is not appropriate, then return to the CLO Course management process. If it is appropriate, then proceed with managing the teaching semester learning plan. Furthermore, the head of study program manages the approval of the semester learning plan. This process ends with the Head of Study Program approving the semester learning plan details.

<table>
<thead>
<tr>
<th>Resource</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of Study Program</td>
<td>70.12%</td>
</tr>
<tr>
<td>Subject Coordinator</td>
<td>99.16%</td>
</tr>
</tbody>
</table>

- Total time for business process existing simulation is 109948,2678 hours
- Total activities are 12 activities.

VI. REDESIGN

Existing business processes can be redesigned and made more simple and effective. After analyzing the existing business processes and simulating them on Bizagi Modeler, the next step is to redesign the business processes.

Business process targeting is a business process that is improved from existing business processes so as to result in fewer and more effective activities. The following is an image of the business process targeting of the semester learning plan, the results of the redesign of the existing semester learning plan business process.

![Figure 2. Semester Learning Plan Business Process Targeting](image2)

This process begins with the Head of Study Program managing the PLO Master with the output of the PLO Master Data. Then proceed with managing components. Next, the head of study program manages the courses, then manages the PLO. After that, the course coordinator manages the CLO Course, followed by managing assessment tools with the output of data assessment tools. Then map the CLO with the output of the clo mapping data. Then the head of study program manages the CLO approval. Followed by the course coordinator views course subject coordinator. If it is not appropriate, then return to the CLO Course management process. If it is appropriate, then proceed with managing the teaching semester learning plan.
This process ends with the Head of Study Program approving the semester learning plan details.

Table II. Result of Business Process Targeting Simulation with Bizagi

<table>
<thead>
<tr>
<th>Resource</th>
<th>Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head of Study Program</td>
<td>86.72%</td>
</tr>
<tr>
<td>Subject Coordinator</td>
<td>89.31%</td>
</tr>
</tbody>
</table>

- Total time for business process existing simulation is 42791.07528 hours
- Total activities are 11 activities.

VII. Conclusion

There are several GAPs or differences between the two business processes, existing and targeting. In this case, it is focused on several activities in the semester learning planning process that runs at iGracias. Business process redesign gives better points in terms of the total time and activity required for the process. Therefore, the business process of Telkom University's iGracias semester learning plan requires a redesign implementation at iGracias to make activities, time, and utilization more effective than the current one with the redesign recommendations provided by this paper.

VIII. Bibliography