Sales Revenue Sharing Model using Dynamics NAV Modification in Health Industries

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Abstract. ERP system is a general system known in this era. One of the ERP System is Dynamics NAV used by IGMLabs. Nevertheless, with the revenue sharing process at IGMLabs, modification is needed to automate the manual summarizing hospital transactions from excel and to automate the manual sales invoice creation process. The sales process, especially the revenue sharing process will be analyzed with ABC or Activity-Based Costing method and the modification will be implemented with Agile technique with steps from Roger S. Pressman’s Extreme Programming (XP) model and the testing will use the Blackbox Testing method. The result will automate the summarizing process of transactions from hospitals via web service with one simple step and automate the sales invoice creation just with a simple button.

1. Introduction

Enterprise Resource Planning System or known as ERP System has been used in many companies, including small to large companies. ERP is a system that was built to accomplish what the conventional method cannot do. ERP System integrates all the functional areas of a company into a smaller size of data to help the middle nor the top-level to decide the company’s future plan [5]. ERP system is built based on the best practice but it cannot guarantee that the system supports the whole business processes in a company. Sometimes, a modification is required to align the system with a company’s business processes.

The word “Sales Revenue Sharing” means that in the sales business process of the company uses the sharing method. The revenue that was earned by executor will be distributed equally or differentially regarding the contract which is made during the negotiation between the investor and the executor. Revenue sharing will be based only on the revenue that was made and set aside the operational cost used by the sales process [1]. The revenue sharing method differs from Profit Sharing method. In profit-sharing method, the gain or loss from the sales process will be distributed equally to the investor and the executor [4]. Operational cost will be calculated in profit sharing method. The
profit-sharing method will be a concern for the investor because the loss of the process will be distributed equally. Therefore, many companies use the revenue sharing method instead of the profit-sharing method. Many companies use the revenue sharing method in their business process. But they use the conventional method which uses Microsoft Excel. So, a modification will be implemented into their Dynamics NAV system to automate their revenue sharing business process using the Agile method and the model of Agile that will be used is Extreme Programming Mode (XP Model) by Roger S. Pressman.

Agile development approach is a common implementation method used in an system implementation project. Agile development approach is focusing on interaction quality or relationship between the team and the client rather than the project or tool itself, the functioning project or tool rather than the complete and detailed documentation and collaborative attitude with the client is more important than following the negotiation contract and adaptive to change is more important than following the current plan [7].

Agile development approach has several principles, there are customer satisfaction, welcoming change, fast software developing, teamwork, suitable environment, communication, usable software, continuous support, design and feature-driven, simplicity, architecture, design and needs and self-development. Agile development approach will make the development process faster.

Extreme Programming method was introduced by Kent Beck in 1996. This method has been approved as the most successful Agile model used in many countries. The scope of this model is small so the project will be focused and the scope can extend, following the user needs. The extreme programming cycle includes planning, design, coding and testing. The four phases in extreme programming model on Figure 1 is based on Roger S. Pressman model [10].

**Extreme Programming (XP)**

Planning design is the first step in this model. Planning phase will be conducted to analyse user requirements and what they want the system to do or run. This step usually generates user stories so the developer knows how to design the system. The user story describes the user needs in a written text and sometimes there will be more than one user story, depending on how many users are contributing to the system.

The second phase is design phase where the developer is starting to design some models for the system. Use case diagram is the common diagram used in design phase. Besides, developer will make a Class Responsibility Card (CRC) but CRC is an optional and can be replaced by other diagrams such as Domain Class Diagram, Sequence Diagram and the other common diagrams.
The third phase will be the coding phase. In this phase, developer is starting to build the system by coding the design in previous phase. The coding phase will be fast, focusing only on the main features proposed by the client. There will be more than one coding phase because of the changing user needs.

After the coding phase ends, the next phase is testing phase. The developed system will be tested by the user so the system will be fully ready for live implementation. The testing phase will be conducted to find bugs or error within the developed system and the phase will be repeated to coding phase if there are bugs or changing user needs.

The testing method that will be used in phase is blackbox testing. The black box testing is a testing method that focuses on the features provided by the system. This method will test only the input and the output of the system. It differs from white box testing where the test will analyse the input, processes and the output of the system. Black box testing will test the lost or incorrect system functions, incorrect interfaces, anomaly in the database, incorrect performance and incorrect initialization and termination.

Black box testing has two strategies, including the limited value for testing that limit the value by minimum input variable, higher value above the minimum value, normal value, lower value below the minimum value, maximum value and equivalent class testing that classify whether the input is the valid or invalid result. Black box testing has four benefits compared to white box testing, they are the decided program specification from the beginning of the project, focused testing on features, bug found in the program and no need to look for the source-code. Besides, black box testing has a weakness, it is incapability to create a detailed and proper documentation.

Analyzing IGMLabs revenue sharing process
Modification for revenue sharing process
Implementation of the modification in revenue sharing process

Figure 2. Modification Implementation Flow

Analyzing process will be focused on revenue sharing process at IGMLabs, as shown in Figure 2. Revenue sharing process is a different process from regular sales process that start from sales order, delivery order and sales invoice. Revenue sharing process starts from received huge amounts of transactions from many hospitals via excel in a disc. The disc will be delivered by courier to IGMLabs head office in Jakarta. It usually takes one to two days of work until it arrives at head office. Transactions received in the disc will be recapitulated and the accounting staff will create a sales invoice based on the recapitulated transactions. ABC costing method will be used to analyze the current revenue sharing process to find the bottleneck that causes the delayed-time of receiving and recapitulating process. The implementation method will use the extreme programming method by Roger S. Pressman and the testing will use the black box testing method that focus on the feature of the modification.
2. Current Sales Revenue Sharing Process
The current sales revenue sharing process in some of companies uses Microsoft Excel to recapitulate the transactions given by the hospital. After the recapitulation of one hospital is completed, they create a sales invoice in Dynamics NAV to bill the hospital. With this conventional method, cost and time are wasted and productivity is decreased because the time and cost inefficiency. Each hospital produces thousand transactions each month. With that huge amount of transactions, the recapitulation and invoicing process will take a lot of time. The waiting time of the disc retrieving process is up to two days of work. The target of the company is the recapitulation and the invoicing process of the five hospitals will take a maximum of one day of work, counted from the time of disc retrieving is completed. The costing method that was used to analyze the gap between the target and real condition is Activity Based Costing or ABC Costing method.

![Figure 3. Current Revenue Sharing Process Flowchart](image)

The revenue sharing process (Figure 3) will start from transactions sent by hospital with disc and received at IGMLabs head office. The transactions will be recapitulated and the invoice will be created manually, illustrated in Figure 4. After that, the invoice will be posted and printed then will be sent to hospital. All the processes are executed manually so it takes lot of time to complete each process (Table 1).

| Table 1. Current Process Costing |
|----------------------------------|
| Process                          | Total Time | Labor Cost/ month | Non-Labor Cost/month | Total Cost |
|----------------------------------|------------|-------------------|-----------------------|------------|
| Transactions retrieving          | 14400 minutes | 0                  | 50000                 | 50000      |
| Data recapitulation              | 25 minutes  | 3470              | 1710                  | 5180       |
| Sales invoice creation           | 25 minutes  | 3470              | 7060                  | 10530      |
| Sales invoice shipping           | 14400 minutes | 0                  | 50000                 | 50000      |

*cost in IDR
Figure 4. Current Sales Invoice Printout

3. Projected Sales Revenue Sharing Process
With the modification that will be implemented into the Dynamics NAV system used, the gap between the company’s target and the current condition will be gone and the modification will cut the cost up to 51.36% because the expedition expense will be cut off and replaced with web service provided by Dynamics NAV. Recapitulation process of the five hospitals will only take up to thirty seconds from previous that take up to twenty-five minutes. Not even the recapitulation time will be cut off, the sales invoice creation process will be cut off to 0.085 minutes or one second (Table 2). All the processing time will be cut off by up to 50.08%.

Table 2. Projected Process Costing

| Process                  | Total Time | Labor Cost/ month | Non-Labor Cost/month | Total Cost |
|--------------------------|------------|-------------------|----------------------|------------|
| Transactions retrieving  | 0.5 minute | 0                 | 0                    | 0          |
| Data recapitulation      | 0.5 minute | 345               | 560                  | 905        |
| Sales invoice creation   | 0.085 minute | 10               | 5355                 | 10530      |
| Sales invoice shipping   | 14400 minutes | 0              | 50000                | 50000      |

4. Proposed Modification
Modification will include the web service creation as the bridge for the transaction that will be sent by the hospital information system (HIS) to Dynamics NAV that only requires a stable internet connection. A huge amount of transactions from five hospitals will be collected into a single table in Dynamics NAV and the recapitulation process can be conducted after the transactions have been successfully sent into Dynamics NAV.
The transactions from every hospital will be processed with one single button named “Process Transactions”, as illustrated in Figure 5. With the button, all the transactions will be processed per hospital and the processed transaction will be marked as “Processed” so if the button is pressed again, the marked transactions will not be processed to prevent the incorrect invoice amount. The processed transaction will be sum up and create a record that contains the hospital name and the revenue amount, as shown in Figure 6. The button named “Create Invoice” will be created to automate the sales invoice creation. The automatic sales invoice creation process only requires the customer name, billing period and posting date. After the invoice is created, the column “Invoiced” will be ticked to prevent the duplicate invoice creation that mislead to incorrect invoicing amount, as proposed in Figure 7. The web service will be created to receive the transaction from hospital information system, as proposed in Figure 8. Web service can received a huge amount of transactions from many hospitals simultaneously. The required fields to be filled are date, document number, item number, customer number, checkup code, description, quantity, unit price and amount. The rest will be filled automatically by the system.

Figure 5. HIS Transaction

Figure 6. HIS Summary

Figure 7. Proposed Sales Invoice Printout
5. Conclusion
The modification will automate the transaction retrieving process from every hospital and the recapitulation of those transactions will be easier and faster up to 50% from previous conventional process. The manual sales invoice creation will be replaced by automatic invoicing with a single button. The sales invoice creation will take up to 0.017 minutes per hospital. The whole process cost will be cut off by up to 51.36% and the time will be cut off by up to 50.08%. The big cost and time cut off is the transaction retrieving process from two days of work and 50.000 IDR to 0.5 minutes and zero cost because the expedition expense is replaced with web service feature provided by Dynamics NAV.

6. References
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