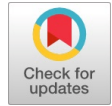


# Design of ERP Production Planning Module to Optimize the use of System Application and Processing (SAP) Software Using Business Process Improvement and Activate SAP Methodology at PT. XYZ



Fadila Aulia Nurhidayah, Endang Chumaidiyah, Agus Ahmad Suhendra

**Abstract:** *The management of a company always tries to find a solution on how to survive and be able to align company resources with the development or increasing business demands. Increasing business demands, especially in managing company resources, require a systematic and integrated system. One way is to improve the Enterprise Resource Planning (ERP) system that is currently owned by changing or increasing its status by upgrading to ERP that is able to help company employees in managing company assets, production needs, customer management, accounting and financial systems. One type of ERP that is widely used by large companies is the System Application Product (SAP). In addition, to optimize its operational performance by reimplementing SAP ERP because in its operations there are still several business processes that have not implemented SAP ERP to improve Business Process Improvement, cost efficiency through integrated digitalization and corporate value*

**Keywords:** *Enterprise Resource Planning, SAP Activate, Business Process Improvement, Software System Application Processing (SAP)*

## I. INTRODUCTION

In this era of globalization, technology and information have a very important role for companies in any field. By mastering quality technology and information, companies can manage a challenge to become an advantage for the company and can face competition from emerging industries. The increasing business competition is also a reason for companies to switch to using information technology as a support for running their business. The application of integrated information technology can make it easier for a company to process, store and distribute the flow of

information in the company. So that it can increase productivity and support the company's business processes to be more effective and efficient.

Basically, a large or small company has business activities consisting of several processes that are run in the company or commonly called business processes. Business processes are a series of activities that are deliberately arranged and carried out to produce an output that can be a trigger in other business applications (AlShathry, 2016) [1]. This business process consists of a combination of several interrelated activities (Harrington, 1991)

Business process analysis will provide information on how to analyze business processes carried out by the company within a certain period of time [2]. Mapping business processes can be started by modeling the business processes currently running in the Company [3]. Modeling like this will produce documents that can be presented in the form of flowcharts or UML activity diagrams or other forms. Business process documents are used as written references for the company's standard operating procedures (Gunasekaran et al., 2002)

In addition, digitalization is one of the important keys to increasing productivity [4], one of which is by implementing Enterprise Resource Planning (ERP). (Kilic, 2015) [6] states that different and diverse information originating from different processes can be integrated by the ERP system for better support for managerial decision makers [7]. The ERP system is also an information system that allows organizations to improve their business processes [8], minimize information redundancy and improve information integrity (Shin, 2006) [14]. Currently, the ERP system can be considered the backbone of information systems in organizations (Yang et al., 2007). Over the past two decades, the ERP system has become one of the most important and expensive implementations in the use of corporate Information Technology (IT) [9].

Currently, the use of IT and Information Systems as competitive tools in business activities and companies is already very common [10]. All company activities are carried out with the help of IT devices so that they can be processed properly by the system [15]. However, only a small part of IT utilization in supporting business activities [16]. IT can be improved by designing and implementing a system that can extract business information from existing data so as to

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provide strategic information and can provide support for business decisions.

PT. XYZ is a subsidiary of a State-Owned Enterprise (BUMN) in the construction sector. PT. XYZ itself is engaged in the provision of various products for the construction of highways, airports, environmental roads, parking buildings, and others. The products produced by PT. XYZ are precast, asphalt concrete (hot mix), ready mix concrete. PT. XYZ is located in Cawang, Jakarta.

Currently, among state-owned infrastructure companies, PT. XYZ has become a pioneer in implementing SAP ERP. PT. XYZ has a complete ERP that connects all the modules needed in PT. XYZ's business processes. Since 2020, PT. XYZ has applied 6 (six) ERP modules consisting of Finance & Controlling (FICO), Human Capital Management (HCM), Production Planning (PP), Sales & Distribution (SD), Material Management (MM) and Project System (PS). The ERP system can facilitate business by presenting real-time and accurate information, so that it can facilitate management in making decisions quickly and accurately. In 2022 [11], PT. XYZ wants to optimize its operational performance by reimplementing SAP ERP because in its operations there are still several business processes that have not implemented SAP ERP to improve Business Process Improvement [12], cost efficiency through integrated digitalization and PT [13]. XYZ's corporate value. Based on Figure I 2 on the PT XYZ plan vs realization data monitor, data processing is still done manually. PT XYZ wants to monitor the plan vs realization data systematically [17]. The module used in the Operations Control division is the Production Planning (PP) module which is used to run the planning process and control manufacturing within the company [18]. In monitoring the plan vs realization, the Operations Control division currently makes reports on production costs for each project [19]. The problem often faced by the Operations Control division is the difficulty in processing production cost data in the form of Work and Financial Plans & Implementation Plan Budgets. Work and Financial Plans are planning and budgeting that contain business plans and cost plans for each project, while the Implementation Plan Budget is a calculation of project costs and specifications of construction work to be carried out [20].

Currently, the division in its document management is still manual, namely by using Microsoft Excel which is prone to errors in inputting or processing data on documents created such as data redundancy. These cost data are processed using Microsoft Excel which has many sheets, in the Work and Financial Plan data it has 19 sheets & the Implementation Plan Budget has 17 sheets so that the Operations Control division has difficulty in processing data, making the data processing process long and requiring more accuracy. The flow of documents in this operations control section will be forwarded to the finance section manually. This is because there is no real-time and integrated information system so that it cannot support the Operations Control section in creating documents related to production plans and costs which causes this division to have difficulty in processing its cost data at closing. This data will be used by the company to be used as a financial report.

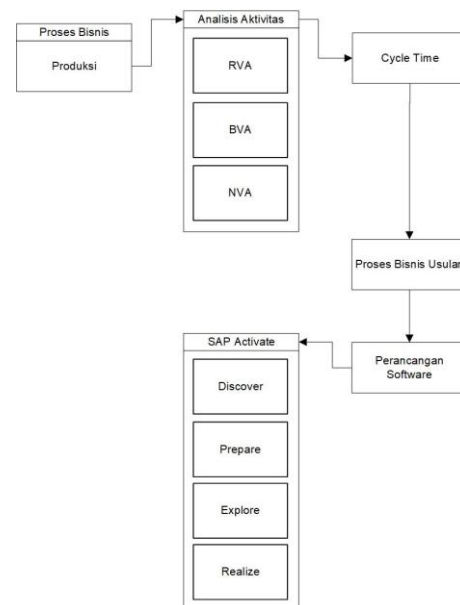
## II. METHODS

### A. Business Process Improvement

Business Process Improvement according to (Harrington, 1991) is a systematic methodology developed to help companies or organizations make significant progress in the performance of existing business processes [5]. Business Process Improvement provides a system that can assist in the process of streamlining business processes and ensuring that internal and external customers of the organization get better output than before. The main purpose of Business Process Improvement is to ensure that the organization has a business process that can adapt to changing customer needs, maximize asset utilization, minimize delays, and provide the organization with a competitive advantage.

### B. SAP Activate

In business informatics, software project methodology defines the implementation guidelines in SAP. Historically, SAP has had its own project methodology called ASAP, which stands for Accelerated SAP. However, a few years ago, SAP introduced the SAP Launch project methodology for its Cloud product portfolio which is also based on the waterfall principle or the earliest SDLC approach used for software development. This methodology has been transformed into the SAP Activate implementation methodology. The SAP Activate methodology consists of six phases used for managing complex projects, organizational change management, solution management and industry-specific implementations. SAP Activate is an SAP system implementation solution with the S/4 Hana platform. There are several scenarios that can be applied in system implementation using the SAP Activate method such as; new implementation, system conversion and landscape transformation. The system design is done using the new implementation scheme.



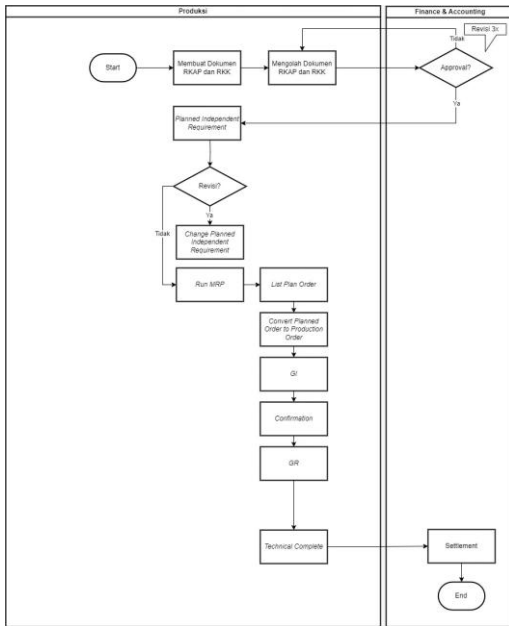
**[Fig.1: Conceptual Model]**



In this study, researchers identified the business processes of PT XYZ. In identifying the company's business processes, it is only focused on the production section to find out what the company needs to do to improve the system. Activity analysis is carried out to identify activities that can be made more efficient. Then the results of the identification are used to improve business processes and create proposed business processes and design SAP software.

### III. RESULT AND DISCUSSION

#### A. Existing Business Process



[Fig.2: Existing Business Process]

$$T_n = \frac{RVA}{RVA+BVA+NVA}$$

$$T_n = \frac{515}{515+450+0}$$

$$T_n = \frac{515}{965}$$

$$T_n = 0,533 \text{ atau } 53\%$$

In the efficiency calculation process, a comparative value of 54% was obtained, which shows how high the level of process time efficiency is.

#### B. Proposed Business Process

$$T_n = \frac{RVA}{RVA+BVA+NVA}$$

$$T_n = \frac{150}{150+65+0}$$

$$T_n = \frac{150}{215}$$

$$T_n = 0,697 \text{ atau } 69\%$$

[Fig.3: Proposed Business Process]

In the efficiency calculation process, a comparative value of 69% was obtained, which shows how high the level of process time efficiency is.

#### C. Program Rencana Kerja Dan Keuangan

The RKK program already exists in SAP PT XYZ with t-code ZPP009 but only stores plan data. Later, the RKK program can display plan data and realization data from production/revenue and direct field costs (BLL). The RKK program will be developed into 4 menus, namely:

Production/Revenue Plan, Production/Revenue Realization Plan, Direct Field Cost Plan (BLL), and Direct Field Cost Realization Plan (BLL).

### Rencana Kerja dan Keuangan (RKK)

[Fig.4: Selection Screen Program RKK]

In the Selection Screen Report Work Plan and Finance there are 2 inputs, namely Plant and Period. Then there are 4 menu options, namely Production Plan/Revenue, Production/Revenue Ra Ri, Direct Cost Plan (BLL), Direct Cost Ra Ri (BLL). In the program there is validation, namely in filling in the period, validation is given, namely the check input field period must not be < than the period system date, and plan data can only be input 3x per UP per period (initial data, 1st revision, and 2nd revision). After the plant and period are input, the user selects one of the menu options and executes.

#### D. Program Anggaran Rencana Pelaksanaan

The new RICEF program consists of 2 Menus, namely: ARP Production/Revenue contains ARP Production-Revenue Plan and ARP-7, and ARP Field Operational Cost contains ARP AHS Sewakelola. Then it has 3 sub menus, namely: Upload ARP menu (1x upload per year per UP), Change ARP menu (ARP Revision), and Display ARP menu.

[Fig.5: Selection Screen Program ARP]

In the Selection Screen of the Implementation Plan Budget, there are 2 inputs, namely Plant and Period. Then there are 2 menu options, namely ARP Production/Revenue and ARP Field Operational Costs with upload, change and display options. In the program there is validation, when executing the program, namely check input year must not be less than the year system date and ARP data can only be uploaded 1 x per UP per year (initial data), if there is a revision then by selecting the change menu. After the plant and period are input, the user selects one of the menu options and executes





#### E. Program form ARP-1

In the business process of PT XYZ. The ARP program is expected to be able to print the ARP-1 form from the ARP program data (ZPP012)

The selection screen to run Form ARP-1 is inputted by entering the plant, year, date, main director, director of operations & marketing and head of production unit.

#### IV. CONCLUSION

Optimization of information systems at PT XYZ is very important in adding benefits to the company's operational processes. Among them are increasing efficiency, effectiveness and providing added value for the company related to product information to customers. This study involved PT XYZ which was used as the object of research. Based on the results of the ERP design analysis in the Production Planning module to optimize the use of SAP software in the production section of PT XYZ based on business processes, it can be concluded as follows

1. The results of the analysis of the existing business process of the production section show an efficiency value of 53% with a cycle time of 965 minutes.
2. After that, a new business process is proposed to improve the existing business process. The proposed business process of the production section shows an efficiency value of 69% with a cycle time of 215 minutes. The proposed business process shows an improvement of up to 13% in process efficiency.
3. The results of the ERP system design using SAP software start from the discover process, namely the initial planning by searching for all data and seeing the ongoing business processes, prepare, namely designing organizational structures, applications, describing existing business processes and company business processes that are applied to a company model-based system for the purposes of GAP analysis and implementation of improvements, explore, namely identifying business processes to make adjustments to the designed system, realize, namely customizing SAP based on the needs and business processes to be designed. PT XYZ wants to optimize the use of SAP software by creating reports and forms to make it easier for the production planning team to design and process RKAP and RKK data.

#### DECLARATION STATEMENT

After aggregating input from all authors, I must verify the accuracy of the following information as the article's author.

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- **Ethical Approval and Consent to Participate:** The data provided in this article is exempt from the requirement for ethical approval or participant consent.
- **Data Access Statement and Material Availability:** The adequate resources of this article are publicly accessible.

- **Authors Contributions:** The authorship of this article is contributed equally to all participating individuals.

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