

Analysis of Assessment Cycle of Migration Data from OROS to SAP Hana using Activity based Costing Method in Telecommunication Industry

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Abstract: Indonesia had one of the biggest company in the telecommunication sector, it was PT ABC. The company certainly requires accurate and fast data for all divisions, especially the financial division. PT ABC wants everything to be integrated and automated. Therefore, the SAP application was used to integrate data in the company and also the OROS application to calculate profitability analysis. PT ABC only uses the OROS application to calculate profitability analysis, while the data to calculate it was in SAP. The OROS application had also begun to be abandoned because one of its weaknesses was that OROS was not real-time application and was not integrated directly into SAP, so it was considered ineffective and inefficient for the company. Overcoming the problem above, the researchers will analyze the assessment cycle data in OROS to be migrated to SAP HANA using the method of costing Activity-Based Costing to match the data cycle in OROS and SAP HANA, so that it can be used to generate reports to the Profitability Analysis (CO- PA).

1 INTRODUCTION

Enterprise Resources Planning (ERP) is a software used by an organization or company to manage daily activities in business, for example, accounting, project management, procurement, risk management and compliance, and some supply chain operations. ERP systems can be integrated with many business processes and allow data flow between them (Oracle, 2019). SAP is a corporate application software can be used to manage ERP to help organizations integrate business data and corporate partners. SAP offers a business platform basic data (Savchuk and Kirsta, 2019). SAP HANA is cloudbased software that be the first provider application offered by SAP (King, 2014). PT. ABC is one of the largest telecommunication companies in Indonesia, which is currently going live SAP HANA and still using OROS application to calculate data for profitability analysis only.

OROS Modeler itself has started to not be used for companies, besides OROS Modeler is an application that is not real-time, OROS Modeler applications are also less user-friendly. OROS has also changed its name to SAS CPM (Greiner, 2019). The era that has been completely advanced, encourages PT ABC to immediately go live SAP HANA and leave OROS Modeler. SAP HANA can create several business data

platforms that will later be run on a cloud base directly and in a modern way to scale costs more effectively. (SAP, 2019). The benefits of using SAP HANA, it will help us manage data in one platform in memory, so we can take the action. It's also speed up the pace of innovation and run directly in this new digital economy (SAP, 2019).

Migrating data from OROS to SAP HANA requires a lot of preparation. We must first understand the concepts of OROS and SAP HANA. We need to map components and data from OROS that are needed later in migrating data to SAP HANA. Using Activity-Based Costing in SAP HANA can help the entire process of migrating OROS data to SAP HANA because the OROS application also applies an activity-based costing method. Even so, it still needs to be adjusted in SAP HANA, whether all data in the OROS application are suitable and can be used or not.

An assessment cycle is needed in this analysis as the allocation of company allocation. This assessment cycle is a challenge for researchers to match whether the allocation data from OROS with those in SAP HANA are correct or not. The researcher will also create an architecture for the assessment cycle as possibilities for data flow that will appear when mapping OROS data flow.

2 LITERATURE REVIEW

2.1 OROS

The basis of the Oros model is its three modules, there are Resources, Activities and Cost Objects. The Resource Module contains company resources. Resources are released as a result of the activities carried out. The activities carried out are contained in the Activity Module. Products, services, customers, and so on, are built into the Cost Object Module to determine the dimensions used for profitability analysis. (SAP, 2001)

Each module consists of a hierarchy that is determined by the logistics center, accounts, and cost grouping elements. The center contains the center and other accounts. Account contains cost elements. The center not only helps to determine the hierarchical relationship between objects in the module, but also allows the cost to roll-up. Scrolling creates a collection of costs. Accounts are usually grouped into centers based on resources, activities, or cost objects. (SAP, 2001)

2.2 ERP (Enterprise Resource Planning)

Enterprise Resource Planning system (ERP) is a bundled software solution that integrates all systems, for all core business processes and data into one repository. ERP is required in the integration and integration of all core businesses into one central database that is required to be able to take business inputs (resources) in the form of materials, people and equipment, and transform these inputs into goods and services for customers (Lee et al., 2017).



Figure 1: General ERP Model.

Figure 1 explain the general ERP Model that combine and integrate all core business function(s) into one central database.

2.3 SAP HANA

SAP HANA was introduced in 2015 as a cloudbased ERP that can support a platform in memory to increase speed and comparative data analysis with an older version, which requires a longer implementation time (Lee et al., 2017).

SAP HANA has basic data which is a core component of the SAP HANA road map to support all SAP and non-SAP business processes from an application perspective and data management perspective to be more efficient. Positioned to act as a platform (Lee et al., 2013).

SAP HANA has benefits, one of the benefits of using SAP HANA is reducing complexity, can be accessed anywhere because SAP HANA is cloud-based, and real results (SAP, 2019). Business data platform that processes transactions and analysis in SAP HANA will work at the same time on all data types, with integrated advance analytics and multi-model data processing engines that can be used to develop next-generation applications for smart companies (SAP, 2019).

2.3.1 SAP Controlling

SAP CO (Control) is a module that contains information that will be taken into consideration for management decision-making and usually in toplevel positions in companies such as supervisors. This module can facilitate coordination, facilitate and optimize all processes in an organization. This involves recording the consumption of the factors of production and services provided by an organization. The point is Controlling is used for internal company (Sapbrainsonline, 2019).

Sub modules of the SAP CO module are :

1. Cost Element Accounting
2. Cost Center Accounting
3. Internal Orders
4. Activity-Based Costing (ABC)
5. Product Cost Controlling
6. Profitability Analysis
7. Overhead Cost Controlling
8. Profit Accounting Center.

2.3.2 Activity-Based Costing (ABC)

ABC is a method that assumes that activities will produce cost objects (products, services, customers) and some product cost incurred will create demand for activities (SAP, 2001).

This ABC system recognizes that a business must understand the factors that drive an activity (activity), the costs incurred by the activity, and how those activities are linked to the cost object. First, ABC will place costs on activities that have actually resulted in these costs. After that, the costs of activities are only charged to products that do require the activity (SAP, 2001).

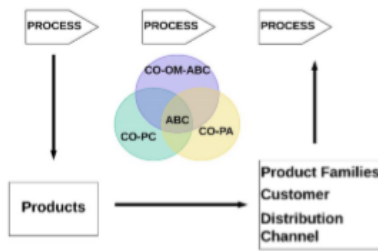


Figure 2: Activity Based Costing in the SAP system.

From the picture above, calculating ActivityBased Costing (ABC) can increase the cost of costing products. Resource center costs can be allocated to business processes based on the provision of actual activities (SAP, 2001).

By including ABC in profitability analysis, it makes a more realistic view of your income position. The main goal is not only to improve individual processes, but also to improve the entire process chain. Other objectives of ABC include shortening waiting time and improving quality (SAP, 2001).

At Figure 2, we can see some processes, products, product families, customer, and distribution channel. They all connect to cycle and Activity-Based Costing is inside CO-OM-ABC, CO-PC, and CO-PA.

2.4 Company Code and Chart of Account

A chart of account is a list of accounts used by companies (Projects, 2019). There are three types of account charts: Account operations charts, country specific account charts, group account charts. The Chart of Account that deals with and posts all regular business transaction processes is an Operational Chart. The remaining account charts are used for different business scenarios. At the request of the client, we can specify another account chart (Projects, 2019).

The definition of a company code is the smallest independent organizational unit that has its own accounting book and is obliged to prepare legitimate individual financial statements, such as balance sheets and income statements. The definition of the company code is mandatory (Portal, 2017).

2.5 Cost Center

Cost center is a location where the cost adds up in organisation indirectly adds to profit. Typical examples include marketing, customer service, research and development .

Cost centers are responsibility for all areas costs within organization and used to capture actual costs of an organization (“What is a Cost Center in SAP — How to Create Cost Centers in SAP,” 2018).

2.6 Cost Element

The cost element is a carrier of costs associated with collecting costs and summarizing costs in controlling and posting to the reconciliation ledgers of financial accounting to control from one controller object to another (Projects, 2019). Cost accounting elements are useful for posting across companies, in all areas of business posting to financial accounting when companies follow the concept of crosscompany cost accounting codes. There are two types of Cost Element, Primary and Secondary Cost Element.

In the financial module, another way to call the ledger account is the primary cost element. To transform a ledger account into a primary cost element, we must specify the category of the primary cost element that determines the nature of the element in control.

The secondary cost element is exclusively made to control. By category, secondary elements can be used for other purposes that are more specific to be made. There are several types of secondary cost elements, including:

1. Internal order settlement
2. Overhead rate
3. Assessment
4. Internal activity allocation.

2.6.1 Assessment

The assessment cycle consists of segmentation, each of which has a unique relationship between receivers, senders, and assessment rules. This can be defined on the CO-PA (Westney, 1997).

Method of Assessment is a cost budget without prioritizing the primary cost element. In this method, the allocation will be done through the secondary cost element. The difference between the distribution and the assessment method is the assessment method which is more directed to the periodic reporting method and the renewal method (Projects, 2019). In the assessment, we will do cost allocation. The focus is on moving data from one cost center to another cost center or even to a business process.

Definition of data migration itself, researchers take refer to the relevant literature from the field data migration. Data migration is a technical process from aggregation and / or separation of information entities from embedding system to match information exchange requirements include adjusting data formats as needed. If the company does not have an approach model for their data migration activities, they cannot guarantee that data migration will be successful and that is the risk (Lüssem and Harrach, 2013).

2.7 Profitability Analysis (CO-PA)

CO-PA is used to analyze the profitability of a company according to existing market segments, categorized by products, customers, orders or a combination of all of these, or strategic business units, such as sales organizations or business areas, which relate to the profit or margin contribution of a company.

2 types of profitability analysis are: cost-based and account base. Cost-Based Profitability Analysis is a form of profitability that focus on analysis groups costs and revenues based on value fields and cost-based valuation approaches, both of which you can set yourself. This guarantees you access at any time to a complete short-term profitability report. Account Based Profitability Analysis is a form of profitability analysis that is regulated in an account and uses an account based valuation approach. The distinguishing characteristic of this form is the use of cost and revenue elements. It gives you a profitability report that is permanently reconciled with financial accounting.

3 METHODOLOGY

3.1 SAP Activate Methodology

The SAP activate methodology is a simple, modular and agile framework for implementation or conversion to SAP S / 4HANA. We can use it ourselves, with SAP Partners or with SAP Direct. It was built on its predecessor ASAP Methodology and SAP Launch Methodology (Kraljić and Kraljić, 2018). There are 6 stages in Activity Methodology, which are discover, prepare, explore, realize, deploy and run.

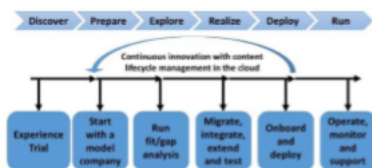


Figure 3: SAP Activate Methodology.

Figure 3 explain all 6 phases in SAP Activate Methodology :

1. Discover
This phase need to identify all requirements, develop strategies and road-map use on the implementation journey. Books, journals, and literature study used to discover related knowledge along the implementation process such as methodology and basic knowledge.
2. Prepare
The second phase project is initiated and planned, including quality and risk plans. Software and system environment is set up, including best practices with ready to run processes.
3. Explore
In Explore phase, use fit/gap analysis to identify the solution and extensions that best meet the company’s requirements.
4. Realize
In this phase, the SAP application will be configured and extend the system based on prioritized requirements captured in explore phase. Structured testing and data migration activities help ensure quality.
5. Deploy
In this phase is final preparations to set the production before cut over to new system and ensure that the system data and users are ready for transitioning to production environment.
6. Run
Purpose of Run phase is to continue adoption of implemented solution across the organization and meet evolving business needs with SAP.

3.2 Research Method

In this paper will focus on implementing 3 phases from SAP Activate Methodology, start from Discover, Prepare, and Explore to see fit/gap analysis in the new design/method.



Figure 4: SAP Activate Methodology for Research method.

Figure 4 explain 4 phases in SAP Activate Methodology that will use for research method. The researcher has analyzed the assessment cycle data in OROS to be migrated to SAP HANA using the

method of costing Activity-Based Costing to match the data cycle in OROS and SAP HANA, so that it can be used to generate reports to the Profitability Analysis (CO-PA) and for SAP Activate Methodology, researchers only focus until utilize stage because they are still analyzing data from OROS to SAP HANA. The researchers also focuses on finding relation from the processes that exist in OROS and SAP HANA. To be able to continue the process up to phase run, the researchers must fully understand how to migrate data from OROS to SAP HANA and determine what is needed by SAP HANA in inputting data.

4 ANALYSIS AND DISCUSSION

4.1 Analysis

4.1.1 Discover

In this Discover, researcher define the environment system in OROS. Researchers analyze activity based costing business processes and identify mass data that must be input one by one. Books, journals, and literature study used to discover related knowledge along the implementation process such as methodology and basic knowledge.

OROS Modeler is a fairly simple application concept that only have 3 core components which are Resource, Activity and Cost Object but to implementing application of OROS Modeler itself can be difficult. The path of the data must be correct.

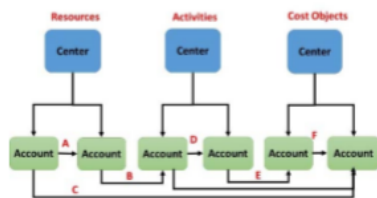


Figure 5: Oros Path.

As shown in the above figure, the possible assignment paths in OROS Modeler, are:

- A - From a Resource account to another Resource account
- B - From a Resource account to an Activity account
- C - From a Resource account to a Cost Object account
- D - From an Activity account to another Activity account
- E - From an Activity account to a Cost Object account
- F - From a Cost Object account to another Cost

Object account.

Data flow from OROS Modeler can be very complex and difficult to track provenance. We need to map objects from OROS from resources to cost objects. In addition, in OROS there are also Cost drivers that are used to charge activity costs to output that are structurally different from those used in conventional cost systems or causal factors that explain overhead consumption. Cost drivers are the basis used to charge fees collected on a collection of costs for the product.

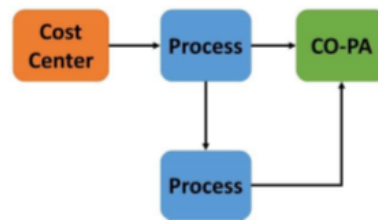


Figure 6: SAP Activate-Based Costing

From the picture above explains that in SAP HANA, there are a few similarities like OROS Modeler. SAP HANA has 3 main components, namely Cost center (resource), Process (Activities) and CO-PA (as a product). For Cost Object in OROS is a product, but another thing in SAP HANA. In SAP HANA, Cost object is a container for company costs and there are various types of cost objects in SAP, which are internal orders, cost centers, Work Breakdown Structure (WBS), production orders, maintain processes and business processes. Business process itself is a cost object for activity based costing.

In Figure 7, the data migration process starts from the OROS application. At OROS, the main components that can be matched with Activity-Based Costing in SAP are predetermined. After that, Record the data that we need in SAP such as Cost Centers, Cost Elements and others. At SAP HANA, we will view whether Cost Center data, Cost Elements, and other data are the same as data that has been entered by companies in SAP. If yes, we continue to check the suitability of the data in SAP. If not, we need to create new data in SAP. After that, just create an Account Chart to classify the parent account. After this stage, we will begin to make an assessment cycle using the KSU1 transaction code. When finished, do a Test Run on the KSU5 transaction code to see there is an error. If there is a warning, check the error and fix it. If not, run it and the process is complete. This research will stop until we can run the assessment cycle because here is the final purpose of this paper.



Figure 7: Data migration process flowchart.

4.1.2 Prepare

The second phases focus on initiated and planned. After knowing the components in OROS and SA, we need to create an architect for the assessment cycle to facilitate the migration of data to SAP HANA.

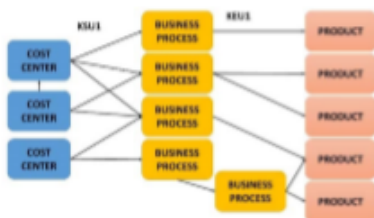


Figure 8: Architecture for Assessment Cycle.

The picture in figure 8 is the architect's assessment cycle in SAP HANA which may appear when migrat-

ing data from OROS to SAP HANA. When migrating data from a Cost center to a Cost center or a Cost Center to a Business Process, you can use the KSU1 in transaction code (TCODE). Before making a cycle at KSU1, we need to prepare several things such as Chart of Accounts, determine senders and receivers, make assessment CELe, group cost centers or cost elements if needed, and determine the cycle names.

This stage is also needed in migrating data from the Cost Center to the Business Process. The difference is when the Cost Center goes to the Business Process, the receiver is the Business Process. Business Process can also be in groups if needed.

In the cycle of making this, we use secondary cost elements. The secondary cost element is a tool for conducting assessments. Secondary cost elements are posts that occur between controller objects in CO. The secondary cost element is basically an account that only exists in the CO module (internal company), not in FI (external company). When costs are moved (e.g., from one cost center to another using valuations, or from cost centers to production orders), no posts are made on P&L FI. Instead, a secondary cost element is used to track the post in the CO document.

4.1.3 Explore

In Explore phase, researchers will use fit/gap analysis to identify the solution and extensions that best meet the company's requirements and needs. The solution for company is mapping data flow in OROS and migrating all data to SAP HANA with assessment in activity based costing.

Process	Migrate data from the OROS modeler to SAP HANA. OROS Modeler is no longer used by the company. Besides the OROS Modeler application is not real-time, the data flow in OROS Modeler is also very complex. OROS Modeler has already changed their name to SAS CPM.
Needs	Make a cost allocation in SAP HANA and can be well integrated. All data in OROS is already in SAP HANA and is automated.
Information	<p>Existing : Migrate data from the OROS modeler to SAP HANA. OROS Modeler is no longer used by the company. Besides the OROS Modeler application is not real-time, the data flow in OROS Modeler is also very complex. The company only uses OROS Modeler to calculate profitability analysis even though it can be directly done at SAP HANA in the form of a report. To calculate all data in SAP and do report in OROS Modeler is very ineffective and not all people at PT ABC know how to use OROS Modeler application.</p> <p>Target : Mapping all the data needed in SAP HANA and ensuring that the desired data is in accordance with what has been calculated in OROS, after that go live on SAP HANA. Make a cost allocation in SAP HANA and can be well integrated. All data in OROS is already in SAP HANA and is automated.</p>
Solution	Implementing activity based costing in Controlling module and using Assessment cycle (KSU1) for allocating cost so it would be effective and efficient.

Figure 9: Fit and Gap analysis.

4.1.4 Realize

In this phase, the SAP application will be configured and extend the system based on prioritized requirements captured in explore phase. Structured testing and data migration activities help ensure quality. Researchers conducted an experiment in migrating data finance in SAP HANA using activitybased costing method and assessment cycle. Researchers do a cost allocation from the base salary account which will be allocated to RCV_Gaji as cost center group and will stop at T663H01 Cost Center.

Controlling Area	1.000	
Fiscal Year	2019	
From Period	9	
To Period	9	
Cost Center Group	T826E01	
Cost Elements	Act. Costs (Rp)	Plan Costs (Rp)
51111011 Base Salary	72.116.445.146	74.406.329.747
Debit	510.649.561.419	528.680.080.763
99010002 Alloc Base Salary	72.116.445.146	-
Credit	72.116.445.146	-

Figure 10: Base Salary and allocation.

In the Figure 10 above, it can be seen that the base salary account before being allocated has a cost of Rp. 72,116,445,146 and that cost will be allocated using the 99010002 assessment account to cost center group. 99010002 is the assessment that we make to allocate the cost from base salary. In assessment, we must know how much cost percentage that we want to allocate. To solve that issue, we used Statistical Key Figures to put how much cost that we need to allocate.

From base salary, it will allocate cost to RCV_Gaji. RCV_Gaji is Cost center group. We can group cost centers and also cost elements if needed. The function of grouping is that we map costs to be allocated according to several cost centers or cost elements needed.

Controlling Area	1000	
Fiscal Year	2019	
From Period	9	
To Period	9	
Cost Center Group	RCV_GAJI : Receiver Cost Center Gaji	
Cost Elements	Act. Costs (Rp)	Plan Costs (Rp)
99010002 Alloc Base Salary	72.116.445.146	-
Debit	72.116.445.146	-
99020001 Alloc Base Salary BP	-10.000.000.000	-
Credit	-10.000.000.000	-

Figure 11: RCV_Gaji allocation.

In the Figure 11 above, it can be seen that RCV_Gaji receives cost allocation from the 99010002 assessment account. From RCV_Gaji will allocate cost to the T663H01 cost center, using the 99020001 assessment account. A minus sign indicates that the costs are allocated.

Controlling Area	1.000	
Fiscal Year	2019	
From Period	9	
To Period	9	
Cost Center Group	T663H01	
Cost Elements	Act. Costs (Rp)	Plan Costs (Rp)
99010002 Alloc Base Salary	10.000.000.000	-
Debit	10.000.000.000	-
99020001 Alloc Base Salary BP	-10.000.000.000	-
Credit	-10.000.000.000	-

Figure 12: T663H01 Cost allocation.

5 CONCLUSIONS

PT ABC is transitioning to SAP HANA from SAP R/3. Choosing SAP HANA is the right choice because SAP HANA has many advantages than SAP R/3. SAP HANA has capabilities include database services, advanced analytics processing, app development, data access, administration, and openness. The benefits to use SAP HANA, it helps us manage data in a single in-memory platform, so we can take action at the moment. Accelerate the pace of innovation and run live in this new digital economy. Activity Based Costing also the right choice to make cost allocation because all business processes at PT ABC based on Activity. Consultants or workers who are familiar with the OROS and SAP HANA applications are needed, so that it can facilitate the process of migrating data from OROS to SAP HANA. In this study, researchers successfully migrated data and were able to allocate finance base salary data using the assessment cycle. The weakness of this assessment cycle is that there is a lot of data and must be mapped one by one, it takes a long time, and we must understand very well the cycle that we made. The strength of this assessment cycle is that we can see the cost allocations and where the cost allocation came from.

For future research, using LSMW might help to automate the data in SAP HANA and also use the ABAP program for data adjustments.

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REFERENCES

- Greiner, L. (2019). Sas canada celebrates partners at sas global forum.
- King, R. (2014). Sap's new cloud strategy includes app marketplace, new pricing scheme.
- Lee, J., Kwon, Y. S., Färber, F., Muehle, M., Lee, C., Bensberg, C., Lee, J. Y., Lee, A. H., and Lehner, W. (2013). Sap hana distributed in-memory database system: Transaction, session, and metadata management. In *2013 IEEE 29th International Conference on Data Engineering (ICDE)*, pages 1165–1173. IEEE.
- Lee, M. J., Wong, W. Y., and Hoo, M. H. (2017). Next era of enterprise resource planning system review on traditional on-premise erp versus cloud-based erp: Factors influence decision on migration to cloud-based erp for malaysian smes/smis. In *2017 IEEE Conference on Systems, Process and Control (ICSPC)*, pages 48–53. IEEE.
- Lüssem, J. and Harrach, H. (2013). How to make data migration processes more efficient by using togaf: Best practice data migration approach applied to sap financial services-policy management. In *2013 ACS International Conference on Computer Systems and Applications (AICCSA)*, pages 1–6. IEEE.
- Oracle (2019). What is erp?
- Portal, S. H. (2017). Company code - sap help portal.
- Projects, E. (2019). Sap book for beginners and learners.
- SAP (2001). Activity-based costing (co-om-abc).
- SAP (2019). What is sap hana?
- Sapbrainsonline (2019). Sap co tutorial – controlling functional module.
- Savchuk, R. R. and Kirsta, N. A. (2019). Managing of the business processes in enterprise by moving to sap erp system. In *2019 IEEE Conference of Russian Young Researchers in Electrical and Electronic Engineering (EICoN Rus)*, pages 1467–1470. IEEE.
- Westney, R., L. N. R. P. (1997). The engineer's cost handbook: Tools for managing project costs.