Increasing Efficiency Through Islamic Banking Enterprise Data Warehouse (EDW) Design Model and Data Cleansing into XBRL Format: Case Study of Bank Muamalat In Subject Financing

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Abstract

Bank Indonesia (BI) as the central bank has a duty to supervise the Commercial Bank in Indonesia. Bank supervision is attached to the Commercial Bank of Conventional and Shariah or Syariah Business Unit. Banks make a system for reporting to Bank Indonesia. The system is made with the terms and Circular (SE) BI.

This report Applications are now being made into LBUS enhancement of Basel 2 to the form of XBRL data format. The system changes LBUS Basel 2 is in the form of XBRL content and business rules. From the technical no change data format of the textfile into XBRL format.

Bank Muamalat Indonesia (BMI), one of Islamic commercial banks have to undertake the development of a reporting system LBUS Basel 2 XBRL. BMI will build the Enterprise Data Warehouse and software to perform the data conversion into XBRL format.

This application is designed with an integrated between EDW Data Mapper to transform data conversion into XBRL format, in a neighborhood Extract Transformation Loading ETL, SSIS SQL Server 2012.

The implementation of this design can improve the effective and efficiency of cost reduction, the number of employees in each branch is not required because it was centralized head office. May reduce the reporting day is very significant. Reduce the cost of licensing and hardware costs are higher than the impact of XBRL conversion system design solution is.

This solution can save 90% of the cost of system development value licensing system implementation.

1. INTRODUCTION

Bank Indonesia, the central bank supervision (supervision) at commercial banks and regulated under the authority of the supreme policy making has been set in the explanation of Article 43 of Law No.23 of 1999 concerning Bank Indonesia as amended by Act No.3 of 2004. supervision of the Bank has been mandated by the Financial Services Authority (FSA).

One of the FSA as a supervisory task, especially for Islamic bank is issuing regulations implementing Good Corporate Governance (GCG), the main objective of the application of IT GCG by the FSA is to provide guidance and policy implementation mechanisms implementasi development of Information Systems in Banking. One of the applications that are being mandated to commercial banks by the FSA is Bank Report (LBU) Basel II, contains financial data, credits, and change some of the existing provisions of sharia LBU be LBUS Basel II XBRL.

The need for changes in the reporting system using the methodology of the Extensible Business Reporting Language (XBRL) in which the basic principles of this methodology are describing (defining XBRL into the data dictionary) and exchanging (data exchange).

Below is a table of investment Bank Muamalat from 2008 - 2013. This table explains that the big budget software applications and operating costs for all branches of Bank Muamalat Indonesia.
The analysis of IT costs from 2008 till 2013, the increasing trend, in terms of the needs of the computer system, resource, and implementation of all infrastructure.

The condition and operation of information systems development in the ongoing Bank Muamalat is still in the process of revamping and partially running, and going on the islands of information systems both in terms of data processing and multi-system infrastructure. Source data is not integrated, Viewer Data Validation and interactive yet user friendly, the needs of the application for conversion of data format on LBU Basel II XBRL XBRL.

2. THEORY

There are several factors that will be the analysis of the results by using the theory of efficiency and effectiveness, among others:

a. Database
   SQL Server is a software licensed databases and ETL tools including SSIS SQL Server Development ie.

b. Mapper / Converting data into XBRL format
   Efficiency Software Keelio just needed centralized and integrated in a single server to serve all branches and head office.

c. Viewer
   ASP.NET Software.

d. Validator

e. For the validation process can be read by taxonomic specification of reporting

Cost Reduction Concept

<table>
<thead>
<tr>
<th>Rasio Cost</th>
<th>( \Sigma B )</th>
<th>( \Sigma C )</th>
</tr>
</thead>
</table>

\[ \Sigma B = \text{Benefit} \]
\[ \Sigma C = \text{Cost} \]

Cost Reduction is: \( \Sigma C - \Sigma B \)

Explanation is cost value reduced benefit value

![Architecture Data Warehouse](image)
Extensible Business Reporting Language

a. Relations (Relations)
   Relationship is a relationship between one concept with other concepts that can be explained through a specific calculation.

b. Source (Resource)
   Resource set the name of a concept, its association with the governing standards and formulations that can be derived from the concept. Taxonomy prepared using XBRL technical specification that refers to the Financial Reporting Taxonomy Architecture (FRTA).

Converting data to create XBRL Format

Keelio software tool that is used as the XML data mapping / conversion. Data adapters to provide complete solutions to integrate multiple data sources such as OLE DB data sources, flat files, and Excel, Oracle, MySQL, and many more types of ODBC compliant data sources, produce documents based on XML and non-XML-based documents quickly and easy.

Approach TSR (String Tawhidi Relations)

Rationale to be used is the conceptual framework of the Islamic perspective is a model approach Tawhidi String Relation (TSR) which in this model does not distinguish between the dependent variable and independent variables.

\[
P = X_1 Y_1 + X_2 Y_2 + X_3 Y_3 + X_4 Y_4 + X_5 Y_5 + X_6 Y_6 + X_7 Y_7
\]

- \( X_1 = \) Application of ENTERPRISE DATA WAREHOUSE (EDW)
- \( X_2 = \) Web Application
- \( X_3 = \) Application of Convert to FORMAT XBRL (KEELIO)
- \( X_4 = \) Software DATABASE (MS SQL SERVER)
- \( X_5 = \) HARDWARE
- \( X_6 = \) ETL TOOLS
- \( X_7 = \) Employee

- \( Y_1 = \) LICENSE of ENTERPRISE DATA WAREHOUSE (EDW)
- \( Y_2 = \) LICENSE of WEB Application
- \( Y_3 = \) LICENSE of SOFTWARE DATA Convert (KEELIO) / 1 PACKAGE 99 LICENSE
- \( Y_4 = \) LICENSE of DATABASE (MS SQL SERVER)
- \( Y_5 = \) LICENSE of HARDWARE
- \( Y_6 = \) LICENSE of ETL
- \( Y_7 = \) Employee Mount

3. METHODOLOGY

Figure: Life Cycle of Enterprise Data Warehouse
### 4. ANALYSIS

#### Specifications and License Data: User License

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Qty</th>
<th>Unit</th>
<th>Concurrent User</th>
<th>Installed User</th>
<th>Named User/100</th>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mapping, Instance Creation &amp; Validation</td>
<td>1</td>
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<tr>
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**Specifications and License Software Keelio**

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**Specifications and License Fee: IDR - Year**

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</table>
### Table Development Costs

<table>
<thead>
<tr>
<th>Cost Items</th>
<th>Variable</th>
<th>Running System</th>
<th>Proposed System</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cost Basis (X)</td>
<td>MultiplierFactor(Y)</td>
</tr>
<tr>
<td>Human Resources</td>
<td>X7, Y7</td>
<td>Rp. 5.000.000</td>
<td>83 Branch x 3 people</td>
</tr>
<tr>
<td>Hardware</td>
<td>X6, Y6</td>
<td>Rp. 105.000.000/server</td>
<td>15 Region x 2 Server</td>
</tr>
<tr>
<td>Software</td>
<td>X1, Y1</td>
<td>Rp. 30.000.000</td>
<td>15 Region x 2 Server</td>
</tr>
<tr>
<td>License</td>
<td>X5, Y5</td>
<td>Rp. 50.000.000</td>
<td>15 Region x 2 Server</td>
</tr>
<tr>
<td>Maintenance</td>
<td>X2, Y2</td>
<td>Rp. 1.500.000.000</td>
<td>20% per year</td>
</tr>
<tr>
<td>Implementation</td>
<td>X7, Y7</td>
<td>Rp. 425.000.000</td>
<td>1 Bank</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>Rp. 20.724.270.000</td>
<td></td>
</tr>
</tbody>
</table>

**TotalCost of Implementation:**

\[
P (SWB) = X1Y1 + X2Y2 + X3Y3 + X4Y4 + X5Y5 + X6Y6 + X7Y7
\]

\[
P (\phi) = f \{EDW[\phi], WEB[\phi], KEELIO[\phi], DB[\phi], HW[\phi], ETL[\phi], KRYW[\phi]\}
\]

\[
= 1.800.000.000 + 5.000.000 + 282.018.000 + 210.000.000 + 0 + 50.000.000 = 2.347.018.000
\]

<table>
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<tr>
<th>Cost Ratio</th>
<th>( \Sigma B )</th>
<th>( \Sigma C )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rp. 20.659.870.000</td>
<td>Rp. 2.056.009.000</td>
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| a. Cost Reduction | \( \Sigma C - \Sigma B \) = Rp. 18.603.861.000 |
| b. Benefit | 90% |

Could save 90% of the cost of implementation of the solution is now compared to the cost of implementation of the previous solution.
5. CONCLUSION

a. Reduction in cost efficiency can be seen from several factors:
   - Integrated data in the DataWarehouse and can accommodate a variety of information needs and minimize the cost of data experts.
   - Impact of XBRL conversion is very influential on the reduction of the number of employees and the long occupation. Work on the proposed reporting system can save 164 employees from all branches and 86 days of reporting needs.
   - Can streamline system development costs 90% of the value of the implementation of a licensing system.

b. Standardization of drafting an effective and integrated ETL to the EDW formation LBUS draft framework of Basel II in the subject area of financing of PT. Bank Muamalat Indonesia.

c. With otomasisasi providing the datasource, so it no longer requires some specialized employees for reporting each branch, thus reducing operating costs employee salaries.

d. Affect the ease of integrating the two technologies Transformation Data (Extract Transformation Loading) with conversion data into XBRL format (KEELIO) in a single SQL Server 2012 SSIS tool.

BIBLIOGRAPHY


C.W. Stanfill, “Type 2 slowly changing dimensions: a case study using the cooperating system,” DOLAP’12: Proceedings of the fifteenth international workshop on Data warehousing and OLAP, pp 81-88


