

# Utilization of Cloud Computing using OLAP: Case Study of Company XYZ

<sup>[1]</sup>Nathania Ferinda Roemawi, <sup>[2]</sup>Amat Deska Arya <sup>[1]</sup>MercuBuanaUniversity, <sup>[2]</sup>MercuBuana University <sup>[1]</sup>41817120001@student.mercubuana.ac.id, <sup>[2]</sup>41516010048@student.mercubuana.ac.id

#### Abstract:

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Data warehouse is the core of decision support systems, which are currently used by all types of companies throughout the world. Although numerous researches have been conducted related to the necessity of decision support systems for small businesses, the majority adopted existing approaches and solutions, which is suitable for large-scale enterprises, but inadequate for small and medium-sized enterprises. Small companies need inexpensive also lightweight architecture as well as tools (hardware and software) that provide online data analysis. To ensure this feature, the study used web-based business intelligence approach. For real-time analysis, traditional OLAP architecture is complicated and storage tends to be very expensive, therefore, the authors also reviewed the in-memory processing. This study discussed the existing approaches and tools that are capable in the main memory and / or the web interface, which are relevant for small and medium enterprises in making the decision.

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#### I. INTRODUCTION

Cloud Computing (CC) empowers businesses in both private and public sectors to revolutionize from traditional business yet extend its collaboration due to the shared network which allows people to interact and access information from different parts of the world. Moreover, the ease of use offered, has the advantage of enhancing capabilities as a result of the on-demand services where businesses could manage its information technology to a certain degree. Consequently, CC brought businesses to increase their versatility, efficiency, and durability [1]. CC has varied of form which are Software-as-a-Service Platform-as-a-Service (SaaS). (PaaS). and Infrastructure-as-a-Service (IaaS) [4].

As numerous valuable information received by these businesses, a Decision Support Systems (DSS) is needed in order to take appropriate actions in regard to the businesses actual and potential conditions. Through DSS, the end user able to explore relations between clients, suppliers, goods, inventories, demography, and revenues within a sequential framework. Amongst all the latest and influential technologies, On-Line Analytical Processing (OLAP) has vast array of major business practices which covers merchandising overview and revenue forecasting, possible strategies, budgeting, and overall evaluation. OLAP is based on a standard data which commonly referred as data cube. It shows businesses insights from various viewpoints at varied level of overview [2].



**II. PROCEDURE FOR PAPER SUBMISSION** 

#### Data selection

Data is a basic description of things, event activities and transactions that are recorded, grouped and stored. However, data is not organized to convey a specific meaning. Data can be in the form of letters, numbers, figures, sounds, or pictures. The data obtained comes from a company called Company XYZ, where the company enters data every day.

#### Data process

Data processing is where a data will be processed or filtered to determine a variable that will be used in the



selection of attributes to be processed.

#### Election

In this process the researcher chooses to determine a variable in which the variable functions to calculate the amount at the end of the OLAP Converter.

#### Count process

In this process the software will calculate some of the data that has been filtered or chosen to calculate the average amount, where the average number will determine the amount of information obtained to see the number of provinces that carry out the transaction expenditure.

#### Evaluation

In this evaluation, a comparison process will be carried out using a chart to determine the largest amount and an analysis will be conducted in which the analysis aims to re-evaluate expenditure on the province.

#### Data sources are documentation

Data source analysis is the process of analyzing existing data sources of Company XYZ in Central Jakarta. This data source consists of several flat files.

## Data warehouse

Data warehouse itself is a collection of data that has a subject-oriented, integrated, time-variant, and fixed nature of data collection in support of management decision making processes. In making a data warehouse there is a data transformation phase where this phase aims to integrate data from data sources into the data warehouse. The data generated in this transformation phase will be used by OLAP tools to analyze data and reporting tools to produce the required reports.

Data warehouse can also be said as a collection of data that is subject-oriented, integrated, cannot be updated, has a time dimension that is used to support the decision-making management process and business intelligence [3]. Based on these definitions, the data warehouse has the following characteristics:

- Subject oriented
- Integrated
- Time-variant
- Non-volatile

In this research, the focus is on monitoring and evaluating expenditures in areas already in the data wherein the data only focuses on variables, merchant\_name, province, and datetime. This will be processed using an Excel application which in the application there is an extension to calculate the average - and will be produced on a chart or diagram that has been made.

#### Data Warehouse tools

The following are tools that users use after the data warehouse is formed with different objectives:

#### • Online Analytical Processing (OLAP)

Online analytical processing (OLAP) is an approach that quickly provides answers to multidimensional analytic queries in a database .OLAP is part of a more global category of business thought, which also summarizes the relationship between reporting and data mining.

#### • OLAP operation

Some OLAP operations include:

- Roll up, used to see the overall data through grouping data.
- Drill down, used to describe the data in more detail so that more detailed information can be obtained.
- Slice, used to divide the cube against a dimension so that it can focus on the desired perspective.
- Dice, used to divide data between two or more dimensions so that you can focus the viewpoint in three dimensions.
- Pivot, used to rotate data to provide alternative data presentation. Schema is a data modelling used for multidimensional data. Schema will describe the relationship between the dimension table with the fact table and the data measures used in the application.

## Reporting

Reporting tools are tools that are used to make it easier for users to get old or current data and perform some statistical analysis standards. Data generated from reporting tools can be in the form of regular reports and can also be in the form of graphs.



Data mining

Data mining is a technology that applies sophisticated and complex algorithms to analyze data and find interesting information from the data set. The fundamental difference between OLAP and data mining is that it will be analyzed. In OLAP, the model is analyzed, but the data mining that is analyzed is the data (must be a large amount).

## **III. FINDINGS**

In this study, using a tool in the form of CUBE which in this section the cube serves to share several dimensions in the desired perspective, as shown below shows how the cube works:

# Figure 2. Cube OLAP

The OLAP cube is a multi-dimensional data array. Online analytical processing (OLAP) is a computer-based data analysis technique for seeking insight. The term cube here refers to a multi-dimensional dataset, which is also sometimes called hypercube if the number of dimensions is greater than 3.

Cube is an abbreviation for multidimensional dataset, considering that data can have an arbitrary number of dimensions. The term hypercube is sometimes used, especially for data with more than three dimensions. A cube is not a "cube" in the strict mathematical sense, because all sides do not have to be the same.

Iris is the term for dimensions that are kept constant for all cells so that multi-dimensional information can be resolved in a physical dimension space (n-1) spreadsheet or pivot table. Each cube cell has a number that represents the size of the business, such as sales, profits, expenses, budget, and estimates. OLAP data is usually stored in star priority or issued snowflakes in a relational data warehouse or in a special purpose data management system. Measures are derived from notes in fact tables and dimensions are derived from dimension tables.

Data

In this study using variables, namely:

merchant_name	minimarket	alfamart
province	Daerah	Dkijakarta
datetime	Tanggal/bulan/thn	20190801

Table 1. Variables

OLAP represents data with a multidimensional cube that is easy to understand. OLAP also provides answers to analytic queries for multidimensional data. In this study, the OLAP method used is the pivoting method. This method allows the user to rotate the cube into a new shape or can arguably be able to display the size values in a different table layout. This is needed by the Company XYZ in the Central Jakarta area to assist the analysis of existing data [4].



Figure 2. Percentage of report results

In the results of this chart the results obtained are in the formThis e-commerce data uses data

# **IV. DISCUSSION**

## CONCLUSION

A conclusion section is not required. Although a conclusion may review the main points of the paper, do not replicate the abstract as the conclusion. A conclusion might elaborate on the importance of the work or suggest applications and extensions.

singular heading even if you have many acknowledgments. Avoid expressions such as "One of us (S.B.A.) would like to thank ... ." Instead, write "F. A. Author thanks ... ." Sponsor and financial support acknowledgments are placed in the unnumbered footnote on the first page.

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