Implementation System of Business Intelligence System In The Company

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Abstract

This study aims to determine the stages that must be implemented in building a Business Intelligence System structured and appropriate in building Business Intelligence Systems in an organization, and understand the important aspects that must be considered for investment development Business Intelligence System is increasing. Business must be based on the conditions and needs of the organization in achieving the desired goals. If these conditions occur, then the decision-making process will be better and more accurate. The purpose of this study is to determine the important aspects that must be understood and prepared in using the Business Intelligence System in an organization. The method used is the explanation as well as the research library of several books, articles and other literature.

Keywords: Business Intelligence System, Strategy, Key Performance Index

1. Introduction

Information technology includes all things related to the process, as well as its use as a tool, manipulation, and management of information. At present the use of information systems technology that is integrated with the work process in an organization has become an absolute necessity. This is due to the need of an organization to improve the ability to analyze a problem and in making a decision. A data, information that is correct, complete and precise becomes a basic need in an organization.

Porter's concept of competitive advantage is mostly used as a reference by academics and practitioners, including in various technology literature (Porter, 1990). Competitive strategies require an IT innovation on an ongoing basis, because if it continues to be carried out in a conventional way it can cause a decline in consumer interest.

The Business Intelligence System (SIB) is a set of procedures and resources used by managers to get daily information about developments in the business environment. The word intelligence is "intelligence". In the business field, the person serving as business intelligence not only has smart thinking, but is also careful in seeing the competition. SIB is part of an information system that is closely related to the company's internal record system.

Information comes from within the company itself, research consultants, advertising agencies, suppliers, customers, even competitors. Business Intelligence has been widely used professionally as a means of diplomacy by competing companies. Competition becomes a foundation in the development of the Intelligence Business. Decreasing the efficiency and inability of a company to get profit is an indicator that it needs in a business intelligence. This business intelligence system is carried out by companies to see the position of competition in similar businesses, while determining the position of the company with other similar companies.

Business Intelligence System (SIB) is a form of implementation that is able to answer the above needs will the presence of known information in the rapid decision making and Akurát day [1-3]. The existence of the application SIB has been used by organizations in managing data and information with the support of decision making and will become a company's basic needs in the future [4].

Based on the above description, then, SIB can help an organization get clear knowledge about the factors that influence organizational performance so that it can help the organization in making decisions while increasing its competitive advantage [5-7]. SIB also helps an organization to analyze the changing times that occur so that it will help the organization determine the strategies needed in anticipation of changing times [8][14].

Efforts to improve organizational performance are a priority. An organization that is clearly capable of identifying, explaining, and implementing its strategy to be able to develop and compete better [9-10]. Even SIB can be used as a basis for supervision because SIB can also provide early information (alerts) if there is a deviation between performance with a predetermined goal, provide automated reports (automated feedback) and monitor real-time Key Performance Index (KPI) [11-13].

The manager's duties and authority absolutely requires an oversight system that is carried out electronically, reliably and integrated. Seeing data that is managed is very diverse with a large number and there are demands to be able to carry out responsive, effective and efficient supervision [15-16].

Efforts to use SIB require relatively large investment in organizational resources, whether in the form of funds, time, or human resources. On the other hand, according to several studies and research results, SIB also has a large enough risk to experience failure (not in accordance with the needs of the organization). This risk will occur if the SIB is not carefully planned.

2. Research Method

This writing uses explanatory methods as well as literature research on several books, articles, and other literature that specifically discusses SIB. In addition, literature studies are also carried out through the internet. The purpose of this study is to examine the right approach in building SIB and Understanding important aspects that must be considered so that future SIB development investments are successful and successful.

2.1. Literature Review

2.1.1. Business Intelligence System

Business Intelligence System (SIB) in English: business intelligence is a system that functions to change data in a company or organization (operational data, transactional data, or other data) into information. This application analyzes data in the past, analyzes it and then uses that information to support organizational decisions and planning.

Steve and Nancy Williams argue in his book "The Profit Impact of Business Intelligence" (2007): Business Intelligence as business information and business analyzes within the context of business processes that lead to decisions and actions and that results in improved business performance. In particular, BI means information assets within key business processes to achieve improved business performance.

SIB in the opinion of Powers (2002): "Business Intelligence System describes a concept and method for improving the quality of business decision-making based on data-based systems. Intelligence business is often the same as. book briefings, report and query tools, and executive information systems. Business
Intelligence is a data-based decision support system.

2.1.2. Benefits of Business Intelligence System for Organizations

According to Steadman (2003). Some of the benefits that can be obtained if an organization implements SIB include:

"First, increase the value of organizational data and information. Through the development of BI, all data and information can be integrated in such a way as to produce a complete basis for decision making. Information that was not included as one of the (isolated) decision-making factors can easily be 'connect and combine' using BI. The data and information produced also become more accessible and easier to understand (friendly-users infos). The second facilitates monitoring of organizational performance. In measuring the performance of an organization it is often used a measure called the Key Performance Indicator (KPI). KPI does not have to be measured in units of money, but can also be based on the speed of implementation of a service.

Third, increase the value of existing Information Technology (IT) investments. SIB does not need / must change or replace the information system that has been used before. Instead, SIB only adds services to these systems so that existing data and information can produce comprehensive information and have better uses.

Fourth, create employees who have good-informed workers. In carrying out their daily work, all levels of an organization (from employees / subordinates to the leadership) are always related and / or require access to data and information. BI makes it easy for all levels of employees to access the data and information needed so as to help make a decision. If this condition is achieved, then the organization's mission and strategy that has been determined can be more easily implemented and the level of achievement is monitored.

Fifth, increase cost efficiency. BI can increase efficiency because it makes it easier for someone to do work: saving time and easy utilization. The time needed to search for data and get the required information becomes shorter and the way to get it does not require complicated knowledge (training). "

2.1.3. Business Intelligence System Implementation

The SIB system that is usually used in organizations has the goal of improving service, cost efficiency, and work effectiveness assigned to the organization. In implementing SIB in a government company, the main thing that must be considered is that SIB must support the achievement of the organization's vision, mission, and strategy in achieving the organizational performance level it wants. Broadly speaking, the implementation of SIB in companies can be seen in Figure 1
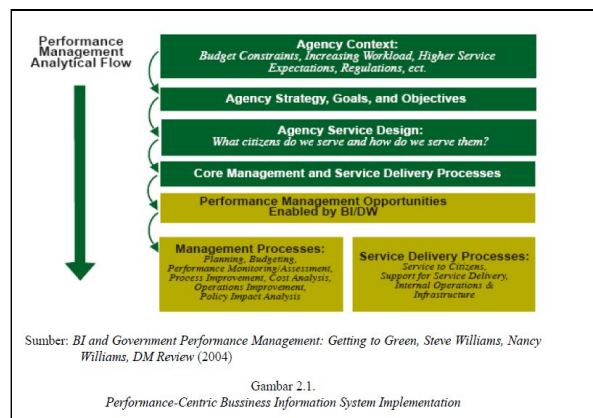

Figure 1. Display Performance Management Analytical Flow

From Figure 1 explains that to develop SIB in a company must be based on the context of the organization in question (conditions, expectations), the objectives to be achieved, the strategies that will be used, and how the form of services to be provided. The existence of SIB that will help the organization in achieving the desired conditions, in the form of improving the management process (management process) and the service process (service delivery process).

2.1.4. Data Warehouse

(William and Richard, 1999) argue that, "Data warehouse is a computer system to archive and analyze historical data of an organization such as sales data, competitors, and other information from daily operations." The main purpose of making a data warehouse is to unify the data diverse into a storage area where users can easily run queries (search data), generate reports, and perform analysis. One of the benefits of the existence of a data warehouse is that it can improve the effectiveness of decision making.

The characteristics of the Data warehouse are, among others: (1) Subject Oriented or subject oriented. A data warehouse is said to be subject oriented because data is arranged in such a way that all data elements associated with the same event / object are connected. (2) Time-variant, meaning that changes in data are traced and recorded so that reports can be made by showing the time of change. (3). Non Volatile means that data that has been saved cannot change. Once committed, data is never overwritten / deleted. Data will be static, can only be read and stored for reporting needs. (4). Integrated, meaning that the data warehouse will cover all organizational operational data that is stored consistently.

The four characteristics are interrelated and all must be implemented so that a data warehouse can effectively have data to support decision making. The implementation of these four characteristics requires a data structure from a different data warehouse with an ordinary operational system database.

While the main function of the data warehouse includes (Darmawikarta, 2003):

1. Data collection and collection (including data from outside the organization needed)
2. Making data, such as cleaning and integrating data
3. Data storage (loading)
4. Provision of data for analysis (query and reporting)

Broadly speaking, the position of the data warehouse in BI implementation can be seen in Figure 2.2. It appears that the preparation of a complete, integrative and connected data warehouse with all operational data is the main capital developed by BI in an organization.
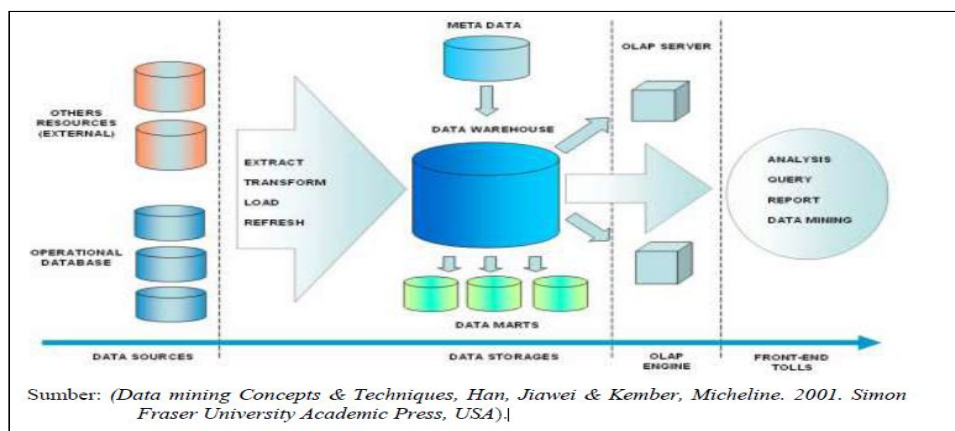

Sumber: *(Data mining Concepts & Techniques, Han, Jiawei & Kember, Micheline. 2001. Simon Fraser University Academic Press, USA).*

Figure.2. Display Implementasi *Data Warehouse*

Some important parts in the data warehouse can be explained as below:

a) Data mart, which is part of a data warehouse that supports the needs of a particular business or department function. Data marts can stand alone or connect to existing data warehouses. There are several characteristics of data mart that distinguishes it from a data warehouse, namely: first Data mart only focuses on one user's needs with one department or business function. Both data marts do not normally contain detailed operational data and all three data marts contain less data than those in the data warehouse, easier to understand and understand.

b) Cube data, is a data processing unit consisting of fact tables and dimensions in a data warehouse.

c) Aggregation, is the initial calculation of numerical data. By calculating and storing answers from previously created queries, the query processing time can be faster. With

aggregation, thousands or even hundreds of thousands of data in a multidimensional database can be searched easily and does not take much time.

2.1.5. Data Mining

Data Mining is often interpreted as "writing many reports and queries". But in reality data mining activities do not make reports and queries at all. Data mining is done with a special tool, which executes data operations that have been defined based on the analysis model. Data mining is the extraction of information or patterns that are important or interesting from the data that is in a large database that has been unknown but has the potential for useful information. (Pyle, 2003) The concept of data mining arises because of the emergence of data explosion due to data accumulation by an integrated database processing system in an organization. The data mining process uses various data analysis tools to find patterns and relationships in data that might be used to make valid predictions.

Table 2.1. Comparison of Statistical Analysis with Data Mining

Statistic analysis	*Data Mining*
Usually starts with a hypothesis (a questions or assumptions)	Data mining does not require a hypothesis
To adjust to the hypothesis then built an equation	Data mining algorithms can be automated develop the equation
Only use numeric data	Data mining tools can use data different types, not only numeric data
Search and filtering can be done against dirty data during the analysis process	Data mining relies on clean data and well documented

The results of data mining operations are in the form of tables and files that contain analysis data that can be accessed with queries and reporting tools. There are four general operations of data mining, namely: (1) Predictive and Classification Modeling, which is commonly used to estimate a specific event. (2) Link Analysis, which is used to find the relationship between records in the database. (3) Database Segmentation, which is used to group records related to segments. This grouping is the first step of data selection, before other data mining operations are carried out. (4) Deviation Detection, which is used to look for records that are considered abnormal and provide reasons for the anomaly.

3. Result and Discussion

a. Project Planning Stage
   At this stage should be able to explain what is the main goal of the SIB project, expectations (expectations) desired, formal support from the Chairperson of the organization concerned, as well as the milestones that will be addressed.

b. Requirement Analysis Phase (Requirement Analysis)
   At this stage, the SIB development needs must be identified in detail. This can be done by compiling and collecting information packages for all information subjects that will be in the data warehouse. The information package function includes: Defining the subject area and the main business process, determining how data will be presented and accessed, determining how users will aggregate or roll up, determining the quantity of data for analysis or query, estimating the size of the data warehouse & frequency refreshing data, Ensuring how information will be package.

c. Design and Construction Stage (Design and Construction)

At this stage the desired architecture and infrastructure must be arranged from the BI design, which will cover 3 (three) main parts, namely:

1) Data Acquisition. This section is related to efforts to extract data from sources – source of data, and attempts to move the extracted data to the staging area (the place where all extraction data is put together)

2) Data Storage. This section is related to attempts to load data from the staging area to the data warehouse repository (in the form of relational data base)

3) Information Delivery. This section is related to efforts to provide a user interface will connect users with the data warehouse. The type can be data mining, or report / query.

d. Deployment Phase

At this stage, the development of SIB that has been carried out in the previous stages must be able to be tested for its use and then tested whether it meets the objectives and expectations as needed by the organization. The end of this stage is marked by the implementation of User Acceptance Test (UAT) and the user has understood how to use the system appropriately.

e. Maintenance Phase

The information needs needed by the organization will continue to grow. For this reason, the SIB system that has been implemented may require further development. For this reason, a continuous maintenance process needs to be prepared.

SIB Development Approach

In the development of SIB, the approach is in accordance with organizational conditions with a practical approach. Where with this approach SIB development will be carried out in each department but still refers to the overall organizational information architecture standard. The background to the selection of the approach method is useful to consider the size of the organization and its information needs, faster to show results (psychological factors), minimize the risk of failure, can be prioritized in departments that require priority.

The Key to Success Factors
Here are some factors that are the key to success in developing SIB:

a. Continued support and commitment from the leadership of the organization to the BI project, because the BI project is not an onestop shopping activity

b. Planning must be mature, realistic and well-defined BI development goals,

c. Obtain full support and enthusiasm from the user and not just rely on outsourcing staff

d. The ETL stage (extract, transform, load) is the work that requires the most energy and time so that the development of BI must pay attention to this stage. Weaknesses at this stage will affect the success of the overall BI implementation.

e. Prioritize information architecture first, then select the technology and BI tools that will be used. The architecture must be truly in accordance with the needs and conditions of the organization concerned.

f. Using the right technology for users and easy to use. Do not have to use sophisticated technology but it makes it difficult for users.

g. Establish Project Management that is truly user oriented

h. Determine clear data coverage because not all data must be connected to BI.

4. Conclusion

The implementation of SIB requires relatively large investment in organizational resources (funds, time, and human resources) and has a high enough risk to experience failure. For this reason, BI implementation absolutely requires careful planning and ongoing support from the leadership of the organization. In developing SIB there are stages that must be fulfilled to ensure that SIB development achieves results.as desired. Broadly speaking, the stages include: Project Planning Phase (Project Planning), Requirement Analysis Phase (Requirement Analysis), Design and Construction Stage (Design and Construction), Implementation Phase

(Deployment), and Maintenance Phase (Maintenance). BI implementation approach that is appropriate to the company's condition, through a practical approach where the development of BI will be carried out gradually and continuously in each department but still refers to the overall organizational information architecture standard. There are several factors that are the key to success in the development of SIB, where 3 (three) things are the most important, namely: Continuous support and commitment from the Leader, careful and realistic planning, complete and reliable data availability.

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