



The strategic role of Data Warehousing Technology in Decision Making

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Abstract: *In computing technology, a data warehouse (DW or DWH), is also known as an enterprise data warehouse (EDW). Data warehousing is a system used for reporting and data analysis. DWs are central repositories of integrated data from one or more than one different sources. They store current and past data and are used for creating trending reports for senior management reporting such as annual and quarterly comparisons. The data stored in the warehouse is uploaded from the operational systems. For instance marketing, sales, etc. The data may pass through an operational data store for additional operations before it is used in the data warehousing for reporting. The types of system consists data mart, online analytical processing (OLAP), online transaction processing (OLTP) and predictive analysis.*

Keywords: *OLAP, DW, DWH, computing, Data, Technology*

I. INTRODUCTION

In the present decade organizations have recognized the new way of using Data Warehouse (DW) Technology, for solving decision related problems, because of highly unstructured and semi-structured situations. Actually decision making are made at all levels of Management. Even though decision making at top levels remains always crucial and complex. Present Executive Decision Maker is more interested in forecasting the future, future opportunities, as well as problems which are going to incur in near future. So that well in advance they can prepare to take the opportunity or to deal with the problem situation. Thus to solve any type of problem the decision making is required, and to make decisions Information is required which is made available by the technology called Data Warehousing (DW) Technology. The strategic use of data, which can be refereed as a separate discipline, as that from operational use. The operational databases have been basically designed to meet mission critical requirements of the On-Line Transaction Processing and Batch Processing. The strategic data usage is basically requiring On-Line Query Processing or Batch-intelligence gathering for decision support. In business systems efficiency is no longer a success major factor, it has been replaced by flexibility and responsiveness. In addition to this the emergence of communication factor is to be added to this system. Because of the enormous development in communication infrastructure the transactions have been processed in real-time mode of business operations. The Organization which has come to know the power of information is getting the stronger competitive edge over their rivals and the solution for this is Data Warehousing (DW) Technology.

Surfacing of data warehousing the information value and usage is has been newly recognized. Data warehouses works as means for the strategic data utilization. A data warehouse works as an integrated platform having the integrated data of refined quality which to support an executive decision maker by making usage of Decision Support System or EIS like applications. By making consolidation, conversion, transformation and integration of operational data and by provision of a consistent view a Data Warehouse has been enhanced the productivity of decision maker a senior decision maker is flavored very well by making wage of EIS applications, which allows him the data as per their working style. EIS does have he ability to report regarding impulsive drill-down functionality provides high performance, and highly user-friendly as compared to analyst. Briefly Data Warehousing is a blend of technologies having orientation towards effective integration of operational databases in the environment that enable the usage of data for strategic purpose.

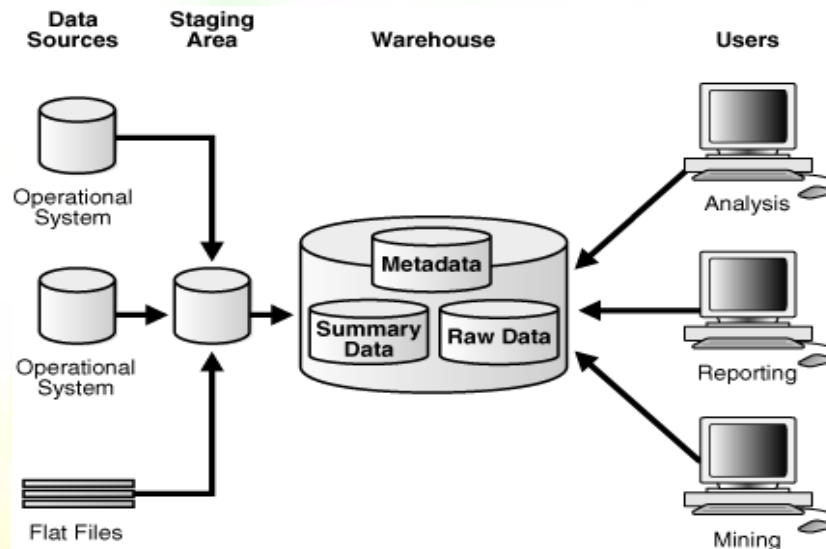
II. WHY DATA WAREHOUSING (DWH)?

In fact Data Warehouses are not any physical products. Data Warehouse is an environment. The Data Warehouses plays vital role of cornerstone, by providing the ability to the organizations to perform information processing effectively. It is a combination of construction of Information Systems, which energies the user with present and historical information can be used for decision making. In other words the data accessing becomes harder, which needed by Decision Maker. The informational requirement of the Knowledge Worker has been satisfied. Data Warehousing provides strategic business opportunities by allowing customers and vendors access to corporate data while maintaining required security measures. As per the business point of view, so as to survive and succeed in today's stronger competitive global environment, the business people & users do need the answers because of following reasons:

- Decisions are required to be made fast and correctly, by using available data.

- The Transactional data generated, which gets doubled every one and half years, which cause slow-response time, and inability to extract the required data contents.
- Since the competition there is an increase in information value and business intelligence.
- Business experts may be people who are non-computer

III. STRUCTURES OF DATA WAREHOUSE



IV. TECHNOLOGICAL CAUSES

Data Warehouses are designed in such a way to over-come the problem of inaptness of Informational and Operational Transactional Systems. The EDP and MIS are designed to satisfy the frequently, incompatible requirements of the business. But IT infrastructure is changing at a rapid speed and its capabilities are increased, as evidenced as follows:

- The price of computer processing speed MIPS (Million Instructions/second) is constantly declining, and while the microprocessor power is getting doubled after every two years.
- The prices of digital storage media is decreasing at a rapid speed.
- Bandwidth of network is increasing, with decrease in the price of high bandwidth.

Because of shift in computing paradigm the Distributed Client or Server computing is emerged in organizations. As a result more-and more critical applications were being placed (ported or developed for) on this new environment. The early-developed Client or Server solutions were found to be scarce to solve today's business problems. This shortage was found incase of runtime and new development aspects of the Client-Server computing.

It was not problem to the design or architecture of client- servers, but it has been additionally introduced new demands on the environment itself.

Object Orientation:

- The need for development in object oriented analysis design and programming, which was became the requirement of the time.
- It can be said he implicit or explicit acceptance of object orientation by IT practitioners, which coupled with the emergence of object oriented standards, and availability of related developments and run-time tools, results, which needs to be accepted by the client or server model.

Middle ware:

- This is the layer in client or server architecture which transforms two-tier client or server computing model into a more complicated client-middle ware-server model.

Storage and Handling of multifaceted data:

- The system ability to handle, store, manipulate a variety type of data for instance Video, text, images, special & time series data in new-object-oriented database systems, as if they were traditional data types.
- High performance commercial parallel computing and largest database (VLDB) Processing.

**V. OPERATIONAL DATA AND INFORMATIONAL DATA (DISTINGUISH)**

Parameters	Informational Data	Operational Data
Data Access	Ad – h & c	Structured
Access Type	Read aggregate added	Read/update/delete file by file
Data model	As per user need	Normalize, automatic access, consistency
Data change	Periodic	Current value
Data content	Summarized, archived, derived	Isolated, durability
Data organization	Frequent change	Subject data is queried
Unit of work	Million per operation	By application
Data stability	Typically, hundreds	Very few per operation
No. of concurrent users	Very low	Dynamic
Transaction volume	Optimized for Compton queries medium	Thousands
Data Structure	Low	Large volume
Types of users	Analytical manager	Predictable
No. of indexes	Complex many	Repetitive

VI. COMPUTING MODEL SHIFT

There is an enhanced movement in computing paradigm. The traditional view of computer users was a getting access to a computer through communication network. The main importance here was to access to known computer program, which was resided on a known, or may a remote system. This concept was mainly like host - based or master-slave computing. The user makes use of computers to solve the problems. Thus there is an assumed understanding that the services requested by a user may not be available on a single system, rather those may be distributed across a network. The users make use of their computer as an entry door to have access to this distributed computing power. The global nature of this kind of business environment is roughly classified as workgroup computing and Local Area Network or Wide Area Network environments.

The main purpose is laid on shared & reusable resources, the attention given to the information super highway, and that of more and more use of global networking services, such as internet and the World Wide Web (www). These are evidences which made the shift in computer paradigm. Thus the primary shift is prompted by data warehousing and its related technologies. Due to increased need of right sizing, the process of business processing reengineering, and the result of this is introduction of work group computing, and a prominent role played by decisions support systems. The users or executives and information workers, paperless office, timely supply of finished goods and services significant increase in customer expectations and so on are the examples what the today's business need to survive in competition. So as to achieve these objectives the technologies like client or server computing, object oriented technology, multimedia technology, distributed computing, usage of artificial intelligence and expert system, communications infrastructure are made use of comprehensively. Informational data can be pulled out from operational data resources. As operational data is in splited form and inconsistent it cannot be used for decision support. Designing of data warehouses is done so as to provide an architecture which will make corporate data accessible and can be utilized by knowledge workers and by decision makers also. Thus the Data Warehouses are significantly differing from operational systems in following respect:

- They support large number of shoot transactions.
- Based is processed on daily based transactions.
- Organized in achievement of best performance.
- Need to update intensively.
- Supported to a large number of con-current user.
- Made we of present data
- On the basis of primary key direct record access.

VII. CONCLUSION

Data warehouse technology is made for satisfying the informational need of knowledge workers, executive decision makers in making strategic decision and it also support executive decision making at all the stages of management.

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