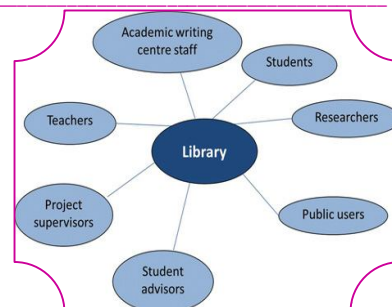## CONCEPTUAL STUDY OF DATA WAREHOUSE: PERSPECTIVE OF LIBRARY AND INFORMATION CENTERS

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ABSTRACT

Libraries functions are that, to collect, store and dissemination of information to the end user or reader along with desired format at desired location. In this library perspective, data warehouse can assist to library management system for making decisions and setting policies. This article is focused on the concept of data warehouse, its need, its characteristics and its functions. It is also discussed on difference between data warehouse and operational database and data warehouse and data mining.

KEYWORDS: *Data warehouse, Data warehousing, Operational database, Data mining, Library data warehouse.*

INTRODUCTION :

Now a day, Information and technology is growing rapidly and it is very big challenges to us to collect all information together, organizing, processing it and distributing to end user. Now we discuss the tools and technologies, which are more necessary for present and future generation of information society. Today data is produced in various forms and from multiple sources. The sources are not always opened and the data should be shifted in meaningful information, it is challenge of information centre.

There are competitive advantages of data in decision making process causes of significantly increasing the interest of data analysis. Surviving is an important thing in the business environment by analyzing, planning and reacting with changing business conditions in timely. Many institutions and organizations have their billions bytes of data, so they are suffering with different problems, the cause is that their data is not arranged in properly. Their data is stored in different computer systems. That is the reason to too late of the availability of data from various sources. For solving these problems, data warehouse concept evolved. Informational needs of knowledge workers can meet by the data warehouse and it can provide strategic business opportunities by allowing customers and venders to access corporate data [2].

"Data warehouse is collection of technologies. Its purpose is to enable the knowledge worker (executive, manager, and analyst) to make a better and faster decision. The aim of data warehouse is that, to bring right information in the right place with the right cost in the right time in order to support right decision" [1]. Dr. S. R. Ranganathan also says in five laws of library and information science that each information should be its reader or user, every reader or user should be their information and save the time of reader or user. Regarding this data warehouse provides all requirements of user or reader.

OBJECTIVES OF THIS PAPER:
•   To understand and explain the concept of data warehouse.
•   To discuss the characteristics of data warehouse.

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- Explain the functions of data warehouse.
- To study the importance of data warehouse in library and information centre.

NEED OF DATA WAREHOUSE:

Information is growing rapidly. There is need one system for collecting all kind of extracted data in periodic basis, storing, analyzing and distributing to end user. The collected data should be cleaned, formatted, validated, reorganized, summarized and supplemented with data from many other sources. This is the necessity of data warehouse which is the main source of information getting.

Data:

According to Debons (2008) and Quoted by Debra & Philip (2014) data as "the collection of numbers, measurements, and simple signals that surround us every day." For example, the data include a name of person, a number of social security, a number of house, and a street sign. In the Information age, data of organization is the raw materials of the Information System. In the Information System, data are the characters stored in database files or records" [3].

Data Warehouse:

The concept 'Data Warehouse' is first coined by William H. Inmon in 1990. According to Inmon "Data warehouse is a subject oriented, integrated, time-variant and non-volatile collection of data." It is extremely useful for data analysts, this data helps them to take business decisions and other data-related decisions in the organization [4].

In the other words, data warehouse is an information delivery system, which integrates and transforms the organization's data into information suitable for strategic decision making. User can get all the historic data from various operational systems and he can combine the internal data with any data from outside relevant sources and pull it together. So there is become possible to resolve any conflicts in the way by using stored data from different systems and transform the integrated data content into a suitable format to provide information to the different classes' users [5].

Characteristics of Data warehouse:

According to Inmon's definition of data warehouse, important characteristics are following:

a) Subject Oriented Data:

This is one of the important characteristics of data warehouse. The term subject oriented show that the relation of particular subject or discipline of organization. This character is not focuses on all the ongoing operations of organization. This is only focuses on the base of subject information. In the educational institutes the subject can be students, faculties, scholars / researchers, library, various departments, curricular and co-curricular activities etc. In the industrial environments the subject is consumers, products, sales, suppliers, revenues etc.

In the library and information centers the subject is library members, library staff, acquisition, cataloguing, classification, circulation, library collection like humanity and social science collection, pure science collection, commerce and management collection etc.

b) Integrated Data:

This is also one of the important characteristic of data warehouse. Data warehouse contains integrated data from various sources like as relational databases, files, and data segments etc. Data warehouse also pulls together all the related data from the various sources. Integrated data from data warehouse helps to administrator for taking proper decision effectively in organization.

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c) Time Variant Data:

Time variant data is also one of the important characteristic of data warehouse. Current data has great value in the database, but the data warehouse contains historical and current data with current value. Changed data from data warehouse is stored time to time. Structure of every data from the data warehouse contains the time elements. This is the significant aspect of data warehouse for taking proper decision and making proper operational design. Nature of data in data warehouse is time variant.

➢ It allows for analysis of the past.
➢ It is relates information to the presents.
➢ It is enables to forecast for future.

d) Nonvolatile Data:

This is last characteristic of data warehouse. The meaning of nonvolatile is, when the new data is added in data warehouse, the previous data is not deleted or removed from the data warehouse. Frequent changes in operational databases do not reflect in data warehouse. It is kept separate from the operational database. Data operational system is moved data in data warehouse at specific interval. Depending on the requirements of the organization, the data movements take place in different frequency.

Functions of Data Warehouse:

Data warehouse's functions are following-

a) Data Extraction:

This function contains, data warehouse collects data from various source or databases. Then data is analyzed and prepare as per user requirement.

b) Data Cleaning:

In this function of data warehouse, data are finds and corrects error in data.

c) Data Transformation:

This function involves, data are converted from legacy format to data warehouse format.

d) Data Loading:

In this function of data warehouse, data are sorted, consolidated, summarized, integrity checked and finally loaded in data warehouse.

e) Refreshing:

This function involves updating from data source to data warehouse.

Difference between data Warehouse and Operational Database:

In this context, operational database covers short period of time because most operations are involved latest data. The data warehouse covers long period of time and it involves historical data. Data warehouse is not updated regularly but the operational database updates regularly or daily. The operational database performs repeatedly the same operational tasks over and over and the data warehouse is updated from the operational data in determined period. In operational database where the data is put in and in data warehouse where the data is out.

Difference between data Warehousing and Data Mining:

The concepts of data warehousing and data mining is likely similar, but they are not the same. Different between data warehousing and data mining is that, Data warehousing is a process of data compiling and organizing into one common database and the data mining is the process of extracting

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meaningful data from the database. Both the concepts are interrelated. There where the data warehouse process complete then the data mining process begins. [6]

Importance of Data Warehouse in Library and Information Centers:

According to Dr. S. R. Ranganathan Library is a growing organism and libraries are moving from traditional form to digital world. Digital libraries are brought enormous changes in information age. Digital collections from various sources can be integrated and accessed from anywhere without knowing by user where the actual sources available. But digital library also some limitations which are fulfilled by data warehouse. Following are the importance of data warehouse in library and information centers:

a) Document Acquisition:

Once the document permanently purchased and stored in data warehouse, then the document can be analyzed and arranged with relational document. Acquisition process focuses on full bibliographical details. It is linked to other related document and pull together.

b) Store integrated data:

Data warehouse stores integrated and consolidated data from various sources. 'It is centralized and integrated database for using huge database Repository effectively'. [7]

c) Focuses on subject oriented Data:

Data warehouse focuses on subject oriented data. If the library is a special library it focuses on only particular subject or discipline, likewise the data warehouse only focuses on subject oriented documents. If the data warehouse contains many subjects that time documents are stored together subject wise.

d) Supplies Historical Data:

Data warehouse contains and supplies historical data, because once a document acquired and stored in data warehouse, it cannot deleted like library. Analyzed data are stored for long period. Data warehouse is updated in determined time.

e) Produces analyzed and systematic report:

Data warehouse stores data with extracting and analyzing from other sources. So it produces reports with analyzed and systematic statistical reports. It helps to library to analyze reader demand, book purchasing decision making, analysis of book circulation and library collection analysis.

f) Support to proper decision making:

Data warehouse supports to entire decision making process of library by supplying high quality information.

CONCLUSION:

Conclusion of this article is that, Data warehouse is a technology which brought enormous changes in library and information centers. Data warehouse contains integrated, subject oriented, time variant and nonvolatile data, so user can get his required information in a time, so library and information center's objective is fulfilled by data warehouse.

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