# Data Warehouse Design for Business Intelligence

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**Abstract: -In past decades the data warehouse design issue becomes very crucial due to explosive growth of information and 90% of this information is in unstructured format. So it is very difficult for business organization to make proper planning and decision based of stored information. Proper data warehouse architecture convert dream into a reality for business organization. For decision making process a data warehouse includes data selection, integration and organization approaches. This paper discussed a data warehouse design model for business organization to support for business intelligence and decision making to survival in market competition**

**Keywords: -** Data warehouse, Business intelligence, decision making

## Introduction:-

The business activities grew more complex and spread out globally, business intelligence need accuratedata for decision makers. Using information proactively has become essential part of business. A business executive needs strategic information for decision making. Operational systems are available to support day to day transaction but they are not capable enough to supportas mush desired. Data Warehousing became the new paradigm for all ofthem who want to analyze their existing data and convertingit into strategic information. But it requires a costly datawarehousing infrastructure to be built over the existing [3]. The main aim of Data warehousing effortsto consolidate data from heterogeneous sources to provide a unified view of the data that can be usedfor business decision support, customer relationshipmanagement and other data analysis tasks. Accuracy of such analyses is crucial and relies upon theaccuracy of the data loaded into the data warehouse [5].

Nowadays, almost every enterprise uses a database to store its vital data and

information. For instance,dynamic websites, accounting information systems, payroll systems, stock management systems all rely oninternal databases as a container to store and manage their data. The competition in the marketplace has ledbusiness managers and directors to seek a new way to increase their profit and market power, and that byimproving their decision making processes [10].

Business intelligence (BI) has two basic different meanings related to the use of the term intelligence. The primary, less frequently, is the human intelligence capacity applied in business affairs activities. Intelligence of Business is a new field of the investigation of the application of human cognitive faculties and artificial intelligence technologies to the management and decision support in different business problems. The second relates to the intelligence asinformation valued for its currency and relevance. It is expert information, knowledge andtechnologies efficient in the management oforganizational and individual business [9].

## 1. Literature Review

Xinrui Liu, et-all [2], presented a proposal for implementing scientific management referred to as center-distributed data warehouse or hybrid data warehouse that local data warehouse is built for each mine enterprise to satisfy the major production management and decision-making while global one extracts information from them.

Yashvardhan Sharma, et-all [3],proposed suitable architecturebased on service orientation to provide differentcomponents of data warehousing as a service and describeshow this architecture provide support for integration anddiscovery of services. Features of web services and datawarehousing are combined to implement the proposedarchitecture. Data warehousing can be supported by service orientation which has the ability to join various servicesfrom different areas of the data warehouse to createcomposite applications. These composite applications cantake the form of common services. Services are composed insuch way that it would be generic to all data warehouses.

Darshan M. Tank, et-all [4],demonstrate how we can savehours or even days, when processing large amounts of data forExtract-Transform- Load(ETL), data warehousing,

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business intelligence (BI) and othermission critical applications.

Kamran Ali, et-all [5], proposed a framework proposed in this paper implements robust data quality to ensure consistent and correct loading of data into data warehouse that necessary to disciplined, accurate and reliable data analysis, data mining and knowledge discovery.

Shastri L. Nimmagadda, et-all [7] proposed ontology based data warehousing and data mining technologies, in which, conceptualization and contextualization of multiple data dimensions (petroleum system's ingredients and processes), Integration (within data warehouse environment) and data mining of interpretable emerging petroleum digital ecosystems are accomplished. Multidimensional data warehousing and mining facilitate an effective interpretation of petroleum systems, minimizing the ambiguities involved during
Structure and reservoir qualifications and quantifications.
Jayanthi Ranjan [9], has discussed the concepts of BI, its components, emergence of BI, benefits of BI, factors influencing BI, technology requirements, designing and implementing business intelligence, and various BI techniques.

## 2. Need For Data Warehousing

A data warehouse is a backbone of an organization's stored data. It helps the organizations to analyze the trends depicted from the data stored with the organization over time. The main function of the data warehouse is to facilitate the organization in planning strategically on the basis of long term data. On the basis of analysis various forecasts, business models and prognosis can be made. In order to take wise decisions and be ahead in competition, data warehouse has become a must to have tool. Data warehousing exclusively differentiate the data and information. As the processed data is the information which is generated through the data capture and properly stored in the data warehouse. That is why, data warehouses becomes the base of Business Intelligence (BI) [11].

## 3. Proposed Data Warehouse Design

The propose data warehouse architecture have four main components: Data Source, Data processing, data warehouse and various end user applications. The data were collected from various resources in

businesses organization from various distributed location. These data have different formats and different storage mechanism. After collection these data are extracted for data processing. Data are processed by data cleaning, filling of missing values, data transformation. After processing data are loaded into data warehouse. In data warehouses stored data are suitable for future planning and decision making. The last and fourth component is end user software. Using different types of software data warehouse data are accessed as per requirement. User can view desired data, prepare various kinds of reports as per requirement, perform various analyses on those data for business planning and decision making.
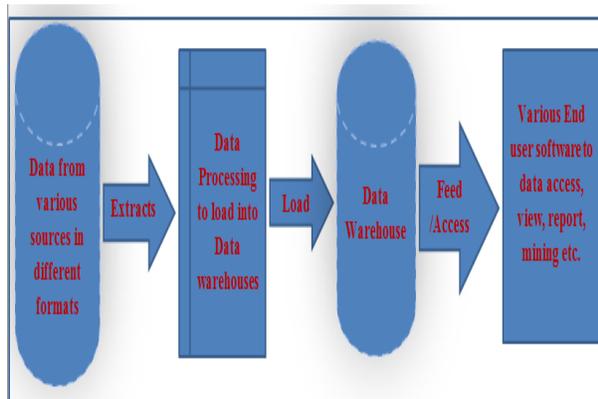


Figure-1: Proposed data warehouse design architecture

**Conclusion:-**

Implementing of proposed data warehousing design can provide organization a competitive advantage. It enables them to leverage information residing within their databases to respond quickly to changes future planning and make better business decisions.

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