

The changing face of data

Unlike earlier days, data comes in various forms and from different platforms or sources. The data needs to be precisely integrated into a common platform, known as a data warehouse, where it can be transformed to drive meaningful information. All big data organizations have incorporated the [best data integration tools](#) and are working with platforms like DataChannel to drive useful insights from the big data silos.

It has become quite easier to consolidate data from disparate systems and find a pattern out of it. But before diving deeper into the concept, one should first know what [Data Warehousing](#) is.

What is Data Warehousing?

Data warehousing is a process used to collect and manage data from multiple sources into a centralized repository to drive actionable business insights. With all your data in one place, it becomes simpler to perform analysis and reporting at different aggregate levels.

It is the core of the BI system and helps you make better business decisions. In simple words, it is the electronic storage space for all your business data integrated from different marketing and other sources.

Types of Data Warehousing

There are mainly three types of data warehousing, which are as follows:

- **Enterprise Data Warehouse:** Enterprise data warehouse is a centralized warehouse that offers decision-making support to different departments across an enterprise. It provides a unified approach for organizing as well as representing data. With this warehouse at your end, you gain the ability to classify the data as per the subject and grant the level of access to different departments accordingly.

- **Operational Data Store:** Popularly known as ODS, [Operational Data Store](#) is used when an organization's reporting needs are not satisfied by a data warehouse or an OLTP system. In ODS, a data warehouse can be refreshed in real-time, making it best for routine activities like storing employees' records.
- **Data Mart:** As part of a data warehouse, [Data Mart](#) is particularly designed for a specific business line like finance, accounts, sales, purchases, or inventory. The warehouse allows you to collect data directly from the sources.

How Data Warehousing Works?

The architecture of a data warehouse consists of three tiers. The bottom one is the database server, where data is loaded and stored. The middle one is the analytics engine that analyzes the data. The top one is the front-end client representing the result through analysis, reporting, and data mining tools. The entire work of a data warehouse depends on these tiers.

The Data warehouse works by collecting and organizing data into a comprehensive database. Once the data is collected, it is sorted into various tables depending on the data type and layout. You can even store your confidential business details in the data warehouse, like employee details, salary information, and others.

Information derived from a data warehouse helps companies to analyze their customers and anticipate the [coming trends](#) in the competitive market. By having precise information about what their customers want and what they are expecting from a business, it becomes easier to serve them right and achieve higher customer satisfaction levels.

With the right data warehousing platform, you can always think ahead of your competitors regarding historical analysis, product development, pricing strategy, forecasting market changes, and customer satisfaction. Investing in an efficient data warehouse will help your business climb to the top of the competition curve.

Data Warehousing and Data Analytics

People often get confused between data warehousing and [data analytics](#). These two terms may seem similar but are not the same, which sums up the difference between them. Data warehousing is the process of consolidating all the organizational data into one common database.

On the other hand, data analytics is all about analyzing the raw data and driving conclusions from the information gained. The concepts are interrelated but different. The process of data analytics begins once the process of data warehousing is completed.

General stages of Data Warehouse

The need for a data warehouse has grown with time. Every organization, irrespective of its size, wants a data warehouse that provides a unified view of all its data. This is the time when the sophisticated use of a data warehouse began.

Here is the list of general stages of the use of a data warehouse:

- **Offline Operational Database:** In this stage, data is copied to a server from an operating system so that loading, processing, and reporting the data does not impact the performance of the operational system.
- **Offline Data Warehouse:** The data stored in the warehouse is regularly updated from the operational database to derive useful business insights.
- **Real-time Data Warehouse:** Whenever a transaction takes place in the operational database, the same is updated in the data warehouse.
- **Integrated Data Warehouse:** Every transaction taking place in the operational database is updated simultaneously in the data warehouse. Then, the warehouse generates transactions that are forwarded to the operational database.

Data Warehouse Appliances

Data Warehouse Appliances are a set of hardware and software tools used for storing data. Every data-driven business uses these appliances to build a centralized and comprehensive data warehouse, where all kinds of functional business data can be stored.

Data Warehouse Appliance

When these appliances are combined with data warehouses, help organizations to meet their modern-day data integration requirements. By combining all customer data in a data warehouse, you can get the following benefits:

- Cross-account indexing
- Easy access to customers' historical data.
- Enhanced interactive voice response technology
- Customized digital communications

Data Warehouse appliances act as the building blocks for creating efficient business data warehouse systems.

Concepts of Data Warehouse

- **Basic Data Warehouse:** With a basic data warehouse, you can minimize the total amount of data stored in a system. This can be done by removing redundancy within the information, making it look simple and clear. As the concept combines information from multiple sources, different departments can access data directly from the warehouse without wasting any time involved in opening multiple folders to get the relevant information.
- **Data Warehouse with Staging Area:** Some data warehouses perform the cleansing process before moving the data to storage. These systems have “staging areas” where information is first reviewed and evaluated and then transferred into the warehouse. This way, you get only useful and relevant data stored in your warehouse. As a business, you can use data warehouses with staging areas to process large

volumes of customer data so that irrelevant information can be filtered out, and your team will only be left with precise information to work on.

- **Data Warehouse With Data Marts:** With data marts, you can enhance your data warehouse's customization level. Once the data is processed, data marts streamline information to teams and employees who need it the most. This will help different departments across an organization boost their productivity as they don't have to wait for other departments to share the required information. This will also increase the pace of decision-making and assist businesses never to miss an opportunity.

Data Warehousing and Business Intelligence

If you have reached this part of the article, then you must have developed an understanding of what data warehousing is. Still, to sum up, data warehousing is a process of combining data from multiple sources and organizing it in a way that supports organizational tactical and strategic decision making. The main purpose of a data warehouse is to provide a transparent picture of the business at a given point in time.

On the other hand, Business Intelligence (BI) can be described as a set of tools and methods that facilitate the transformation of raw data into meaningful patterns to drive useful insights to make better business decisions. The process of BI involves data preparation, analytics, and visualization.

All the BI tools do not aim to provide all three capabilities; therefore, you can go for full-stack solutions to receive the perks of all three capabilities.

BI tools need a data warehouse to work with unstructured data as they have limited data preparation capability. However, you can get a full-stack Business Intelligence Analytics & Dashboard Software from [DataChannel](#) that provides you an end-to-end data warehousing solution.

Business Intelligence is an umbrella term used with data analytics. It is a process that performs data preparation, analytics, and visualization. Whereas data warehousing describes tools that combine data from disparate sources, clean the data, and prepare it for analysis.

Here, we are listing some of the BI tools that can help you get a more straightforward approach to analyze and present data sets in a form that helps users to easily draw conclusions.

Tableau: [Tableau](#) is one of the fastest-growing data visualization tools used by big data-driven organizations for BI purposes. It simplifies raw data and converts the same into an easily understandable format. With this tool at your end, you can speed up the process of data analytics. The tool creates visualizations in the form of worksheets and dashboards that can be understood by every professional working in an organization. The tool allows even a non-technical person to create a customized dashboard.

Features:

- Dashboards that provide you a wholesome view of your data
- Offers collaboration with other users
- Secure sharing of data
- Allows direct data usage from the data source
- Supports different data connectors, like MemSQL, Google Analytics
- Wide range of visualizations

Looker: [Looker](#) is a cloud-based business intelligence platform that collects data from multiple sources to provide its unified view that helps users to make better business decisions. The tool allows the different departments across your organization to analyze supply chains, interpret customer behavior, quantify customer value, and evaluate distribution processes more efficiently. It's easy to use dashboards that allow users to present data and insights into customized graphs, charts, and reports.

Features:

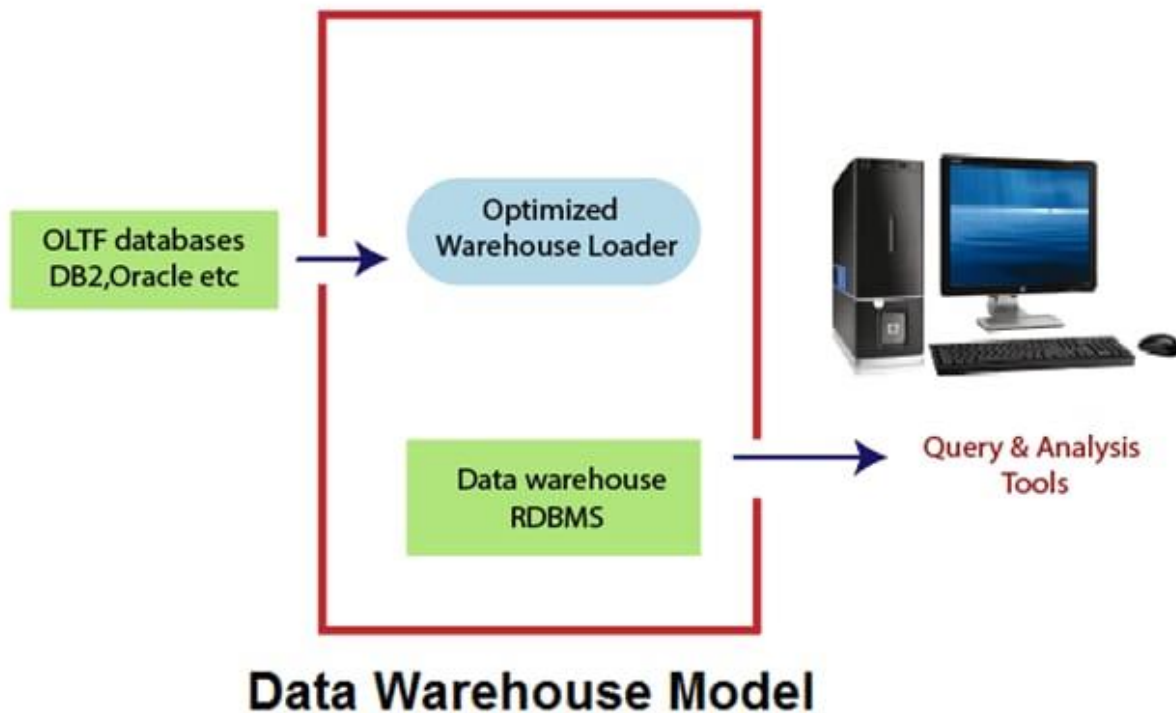
- Provides APIs for integration
- Customizable dashboards

- Drag-and-drop mechanism
- Customize and export reports, charts, and graphs
- Connect to any SQL database
- Modern IDE for agile development and embellishment
- Real-time data exploration and collaboration
- Reliable tech support

Power BI: Another business intelligence platform by Microsoft that pulls data from several source systems in the cloud and on-premises and sums the information in an easy-to-understand dashboard. The platform can be integrated with other Microsoft platforms like Excel and help users to go beyond bar and pie charts.

Features:

- An array of powerful visualizations
- Allows users to select from a range of data sources
- Datasets filtration
- Customizable Dashboards
- Informative visualizations for a clearer picture
- Easy navigation between datasets and dashboards
- Informative reports



Advantages of Data Warehousing

Data warehousing – when successfully implemented – can benefit an organization in the following ways:

1. Competitive advantage

The massive return on investment for businesses that successfully introduced a data warehouse shows the tremendous competitive edge that the technology brings. The **competitive advantage** is achieved by enabling decision-makers to access the data that may reveal previously unavailable and untapped information related to customers, demands, and trends.

2. Increase in the productivity of decision-makers

Data storage increases the efficiency of business decision-makers by providing an interconnected archive of consistent, impartial, and historical data. Data warehousing helps to incorporate data from various conflicting structures into a form that offers a clearer view of the enterprise. By translating data into usable information, data warehousing helps market managers to do more practical, precise, and reliable analyses.

3. Cost-effective decision making

Data warehousing keeps all data in one place and doesn't require much IT support. There is less of a need for outside industry information, which is costly and difficult to integrate.

Disadvantages of Data Warehousing

The following problems can be associated with data warehousing:

1. Underestimation of data loading resources

Often, we fail to estimate the time needed to retrieve, clean, and upload the data to the warehouse. It may take a large proportion of the overall production time, although certain resources are in place to minimize the time and effort spent on the process.

2. Hidden problems in source systems

Hidden issues associated with the source networks that supply the data warehouse may be found after years of non-discovery. For example, when entering new property information, some fields may accept nulls, which may result in personnel entering incomplete **property data**, even if it was available and relevant.

3. Data homogenization

Data warehousing also deals with similar data formats in different sources of data. It may result in the loss of some valuable parts of the data.

Thanking you