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Data Science
Term Paper Submission

Business Intelligence

Introduction, Tools

By

Kunal Sachdeva

Roll No. 19115045

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Abstract

Business intelligence (BI) includes strategies and technologies used by enterprises for the data analysis of business information. In this Term Paper, I am explaining the role of BI, its importance and various tools used in BI for better and smooth operations of businesses. BI helps in understanding and analyzing certain aspects of business and decisions you can take to improve those stats.

Introduction

Business intelligence (BI) refers to the process and technical infrastructure which collects, stores, and analyzes data produced by a company's operations.

BI is a broad term that combines data mining, process analysis, performance measurement, and descriptive analysis. BI analyzes all data generated by the organization and presents easy-to-process reports, performance measures, and trends informing management decisions.

Business intelligence (BI) brings together data mining, business analytics, data tools and infrastructure, data visualization and best practices to help companies to make more data-based decisions. In practice, you know you've got modern business intelligence when you have a complete view of your organization's data and use that data to drive change, root out inefficiencies, and quickly adjust to the market or supply changes. Modern BI solutions give priority to flexible self-service analysis, governed data on reliable platforms, empowered business users, and speed to insight.

Much more than a specific thing, business intelligence is rather broad term that covers the processes and methods of collecting, storing, and analyzing data from business operations or activities to maximize performance. All of these things meet to establish a comprehensive view of a business to help people make better, actionable decisions. Over the past few years, business intelligence has developed to include more procedures and activities to help improve performance. These procedures include:

- **Data mining:** Using databases, statistics and machine learning to uncover trends over large datasets.

- **Reporting:** Sharing data analysis to stakeholders so they can draw conclusions and make decisions.
- **Performance metrics and benchmarking:** Comparing current performance data to historical data to track performance against goals, typically using customized dashboards.
- **Descriptive analytics:** Using preliminary data analysis to find out what happened.
- **Querying:** Asking the data specific questions, BI pulling the answers from the datasets.
- **Statistical analysis:** Taking the results from descriptive analytics and further exploring the data using statistics such as how this trend happened and why.
- **Data visualization:** Turning data analysis into visual representations such as charts, graphs, and histograms to more easily consume data.
- **Visual analysis:** Exploring data through visual storytelling to communicate insights on the fly and stay in the flow of analysis.
- **Data preparation:** Compiling multiple data sources, identifying the dimensions and measurements, preparing it for data analysis.

Importance of Business Intelligence

Business intelligence can help businesses make more informed decisions by showing present and historical data within their company context. Analysts can exploit the BI to provide performance and competitor standards to make the business run smoother and efficiently. Analysts can also more easily identify market trends to boost sales or revenue. Efficiently used, the right data can help with anything from compliance to hiring efforts. A few ways that business intelligence can help businesses make smarter, data-based decisions:

- Identify ways to increase profit
- Analyze customer behavior
- Compare data with competitors
- Track performance
- Optimize operations
- Predict success
- Spot market trends
- Discover issues or problems

Some of the many benefits businesses may experience after implementing BI into their business models include faster, more accurate reports and analysis,

improving data quality, better staff satisfaction, lower costs, and revenue growth, and the ability to make better business choices.

If, for example, you're in charge of production timetables for several beverage factories and sales are showing a powerful month-over-month growth in a specific area, you can approve overtime in near real-time to ensure your factories can satisfy the demand.

Similarly, you can quickly idle down that same manufacturing if a cooler than normal summer starts with an impact on sales. This handling of production a finite example of how BI can boost profits and cut costs when used properly.

Examples of BI

Lowe's Corp
Lowe's Corp, which operates the nation's second-largest home improvement retail chain, is one of the earliest big-box adopters of BI tools. Specifically, it has leaned on BI tools to optimize its supply chain, analyze products to identify potential fraud, and solve problems with collective delivery charges from its stores.

Coca-Cola Bottling Company
Coca-Cola Bottling had a problem with its daily manual reporting processes: they restricted access to real-time sales and operations data.

But by replacing the manual process with an automated BI system, the company completely streamlined the process and saved 260 hours a year (or more than six 40-hour work weeks). Now, the company's team can quickly analyze metrics like delivery operations, budget, and profitability with just a few clicks.

Business Intelligence Tools

Business intelligence (BI) tools are types of software application that collect and process large quantities of unstructured data from domestic and external systems, including books, journals, documents, health records, images, files, email, video, and other business sources. While not so flexible as business analytics tools, BI tools offer a way of collecting data to find data primarily through queries. These tools also help prepare data for analysis so that you can generate reports, dashboards, and data visualizations. The results give both staff and managers the power to expedite and improve decision making, improve operational

efficiencies, identify new revenue possibilities, identify trends in the market, report genuine KPIs, and identify new business opportunities.

Typically used for more straight forward querying and reporting of business data, business intelligence tools can combine a broad set of data analysis applications including ad hoc analysis and querying, enterprise reporting, online analytical processing (OLAP), mobile BI, real-time BI, operational BI, cloud and software as a service BI, open-source BI, collaborative BI, and location intelligence. It can also include data visualization software to design charts, as well as tools for building BI dashboards and performance scorecards that display business metrics and KPIs to bring company data to life in easy-to-understand visuals.

Some of the top BI tools that are currently leaders in BI community are as mentioned and the order of the tools is random and does not constitute a grading system.

1. SAP Business Objects

SAP Business Objects is a business intelligence software which offers extensive reporting, analysis and interactive visualizing data. The platform focuses heavily on categories such as Customer Experience (CX) and CRM, digital supply chain, ERP and more. What's really nice about this platform is the self-service, role-based dashboards its offers enabling users to build their own dashboards and applications.

2. Datapine

Datapine is an all-in-one business intelligence platform that facilitates the complex process of data analytics even for non-technical users. Thanks to a comprehensive self-service analytics approach, datapine's solution enables data analysts and business users alike to easily integrate different data sources, perform advanced data analysis, build interactive business dashboards and generate actionable business insights.

3. MicroStrategy

MicroStrategy is an enterprise business intelligence tool that offers powerful (and high speed) dashboarding and data analytics, cloud solutions and hyperintelligence. With this solution, users can identify trends, recognize new opportunities, improve productivity and more. Users can also connect to one or various sources, whether the incoming data is from a spreadsheet, cloud-based or enterprise data software. It can be accessed from your desktop or via mobile. Setup, however can involve multiple parties and some rather extensive knowledge of the application in order to get started.

4. SAS Business Intelligence

While SAS' most popular offering is its advanced predictive analytics, it also provides a great business intelligence platform. This well-seasoned self-service tool, which was founded back in the 1970s, allows users to leverage data and metrics to make informed decisions about their business. Using their set of APIs, users are provided with lots of customization options, and SAS ensures high-level data integration and advanced analytics & reporting. They also have a great text analytics feature to give you more contextual insights into your data.

5. Yellowfin BI

Yellowfin BI is a business intelligence tool and 'end-to-end' analytics platform that combines visualization, machine learning, and collaboration. You can also easily filter through tons of data with intuitive filtering (e.g. checkboxes and radio buttons) as well open up dashboards just about anywhere (thanks to this tool's flexibility in accessibility (mobile, webpage, etc.). The nice thing about this BI tool is that you can easily take dashboards and visualizations to the next level using a no code/low code development environment.

6. QlikSense

A product of Qlik, QlikSense is a complete data analytics platform and business intelligence tool. You can use QlikSense from any device at any time. The user interface of QlikSense is optimized for touchscreen, which makes it a very popular BI tool. It offers a one-of-a-kind associative analytics engine, sophisticated AI and high-performance cloud platform, making it all the more attractive. An interesting feature within this platform is its Search & Conversational Analytics which enables a faster and easier way to ask questions and discover new insights by way of natural language.

7. Zoho Analytics

Zoho Analytics is great BI tool for in-depth reporting and data analysis. This business intelligence tool has automatic data syncing and can be scheduled periodically. You can easily build a connector by using the integration APIs. Blend and merge data from different sources and create meaningful reports. With an easy editor you create personalized reports and dashboards enabling you to zoom into the important details. It also offers a unique commenting section in the sharing options which is great for collaboration purposes.

8. Sisense

Sisense is a user-friendly data analytics and business intelligence tool that allows anyone within your organization to manage large and complex datasets as well as analyze and visualize this data without your IT department getting involved. It lets you bring together data from a wide variety of sources as well including Adwords, Google Analytics and Salesforce. Not to mention, because it uses in-chip technology, data is processed quite quickly compared to other tools. This platform is even recognized as a leading cloud analytics platform by various industry experts such as Gartner, G2 and Dresner.

9. Microsoft Power BI

Microsoft Power BI is a web-based business analytics tool suite which excels in data visualization. It allows users to identify trends in real-time and has brand new connectors that allow you to up your game in campaigns. Because it's web-based, Microsoft Power BI can be accessed from pretty much anywhere. This software also allows users to integrate their apps and deliver reports and real-time dashboards.

10. Looker

Data discovery app, Looker is another business intelligence tool to look out for! Now part of Google Cloud, this unique platform integrates with any SQL database or warehouse and is great for startups, midsize-businesses or enterprise-grade businesses. Some benefits of this particular tool include ease-of-use, handy visualizations, powerful collaboration features (data and reports can be shared via email or USL as well as integrated with other applications), and reliable support (tech team).

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