

MANAGING DIGITAL ENTERPRISE

Lecture 7

Data Analytics and Business Intelligence

By

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Flash back to the previous lesson 6

Digital Marketing and Customer Experience

1. Fundamentals of digital marketing strategies and tools,
2. Enhancing customer journeys through digital channels,
3. Importance of user experience (UX) in digital marketing)

Lecture 7 Agenda

Data Analytics and Business Intelligence:

- Role of data in digital enterprises,
- Introduction to data analytics and business intelligence (BI),
- Tools and techniques for data-driven decision making.

Overview of Data Analytics and BI in Digital Enterprises

Importance of Data in the Digital Era

Data as the new currency in the digital age

- Companies are collecting and storing vast amounts of data.
- Businesses rely on data for better decision-making.
- Firms leveraging data analytics outperform those that don't.
- AI, IoT, and automation are data-intensive technologies reshaping industries.

Overview of Data Analytics and BI in Digital Enterprises

What is Data Analytics and BI in Digital Enterprises

Data Analytics

The process of analysing raw data to extract actionable insights

Business Intelligence (BI)

Are Systems and tools for transforming data into strategic information to yield insights that inform business

Overview of Data Analytics and BI in Digital Enterprises

Data's Impact on Business:

- ▣ Drives innovation,
- ▣ Operational efficiency, and
- ▣ Personalized customer experiences.

NB. Enterprises that adopt data analytics and BI stay ahead in the competitive digital landscape.

The Role of Data in Digital Enterprises

1. Data as a Strategic Asset

- **Business Growth:** Companies leverage data to identify opportunities and optimize performance.
- **Customer Insights:** Data helps understand customer behavior and preferences.
- **Innovation:** Data fuels product and service innovation by identifying market gaps.
- **Data Monetization:** Businesses can generate revenue from data by offering insights or services.

The Role of Data in Digital Enterprises

1. Data as a Strategic Asset Cont.

□ Types of Data

- **Structured Data:** Organized data, easily searchable (e.g., databases, spreadsheets).
- **Unstructured Data:** Raw data, lacks a predefined format (e.g., emails, social media posts).
- **Semi-Structured Data:** Contains elements of both (e.g., XML files, JSON data).

Significance: Different data types require different analytical approaches and tools.

The Role of Data in Digital Enterprises

2. Data-Driven Organizations

- Characteristics of successful data-driven organizations
 - **Data-First Culture:** Data is central to decision-making at all levels.
 - **Analytics-Driven Leadership:** Leaders prioritize data in setting strategies.
 - **Agility and Innovation:** Data-driven organizations respond quickly to market changes.
 - **Examples:** Google, Amazon, and Netflix as leading data-driven companies.

The Role of Data in Digital Enterprises

3. Data-Driven Decision Making

Using data to enhance decision-making processes and this is by:

- **Real-Time Insights:** Access to data in real-time leads to quicker, informed decisions.
- **Risk Reduction:** Data helps anticipate potential risks and plan for mitigation.
- **Improved Accuracy:** Data reduces guesswork, leading to more precise decisions.
- **Measurable Outcomes:** Data allows tracking and measuring the impact of decisions.

The Role of Data in Digital Enterprises

Data Challenges

Common challenges faced when working with data

- **Data Collection:** Difficulty in gathering accurate and comprehensive data.
- **Data Quality:** Inconsistent, incomplete, or inaccurate data can lead to faulty insights.
- **Data Privacy:** Increasing concerns about protecting sensitive information.
- **Data Integration:** Challenges in integrating data from different systems and sources.

Introduction to data analytics and business intelligence (BI),

A). Data Analytics

What is data analytics? *Provost, F. (2013).*

The process of analyzing raw data to uncover patterns, trends, and insights.

Provost, F. (2013).

- **Purpose:** To inform decisions, optimize processes, and predict future outcomes.
- **Importance:** Data analytics turns massive amounts of data into actionable insights for businesses.

Involves various techniques, such as **data mining**, **machine learning**, and **statistical analysis**.

A). Data Analytics Cont.

Types of Data Analytics

The four major types of data analytics and their applications

1. **Descriptive Analytics:** What happened? (e.g., dashboards, reports)
2. **Diagnostic Analytics:** Why did it happen? (e.g., root cause analysis)
3. **Predictive Analytics:** What is likely to happen? (e.g., forecasting using machine learning models)
4. **Prescriptive Analytics:** What should be done? (e.g., optimization, decision algorithms)

A). Data Analytics Cont.

Key Data Analytics Techniques

- **Data Mining:** Extracting useful patterns from large datasets.
- **Statistical Analysis:** Using statistical methods to interpret data and draw conclusions.
- **Machine Learning:** Applying algorithms to make predictions and find patterns in data.
- **Text Analytics:** Analyzing unstructured text data (e.g., sentiment analysis).
- **NB :** Each technique helps businesses derive insights from different types of data..

A). Data Analytics Cont.

Benefits of Data Analytics

- **Better Decision Making:** Data-driven decisions are more accurate and timely.
- **Operational Efficiency:** Analytics helps identify inefficiencies and optimize processes.
- **Customer Experience:** Personalization and improved service through data insights.
- **Cost Reduction:** Optimizing resources and processes can lead to significant cost savings.
- **Competitive Advantage:** Firms that leverage data analytics stay ahead of competitors.

Introduction to data analytics and business intelligence (BI),

B). Business Intelligence (BI)

What is Business Intelligence, and its role in organizations ?

The use of tools, systems, and processes to analyze business data and provide actionable insights.

Introduction to data analytics and business intelligence (BI),

B). Business Intelligence (BI) Cont.

The BI is helpful in the following ways;

- Supports decision-making at all levels of the organization.

- Transforms raw data into meaningful information through reporting and visualization.

- Helps organizations track performance, identify trends, and improve operations.

Introduction to data analytics and business intelligence (BI),

Key difference and complementarities between BI and data analytics

Data Analytics

- **Data Analytics:** More advanced techniques (e.g., predictive, prescriptive) to uncover deeper insights.

Business Intelligence (BI)

- **BI:** Primarily focused on historical data, dashboards, and reporting for business operations.

NB Both aim to support data-driven decision-making, but with different focus areas.

B). Business Intelligence (BI) Cont.

Components of BI Systems *Turban, E. (2018).*

Key elements that make up a Business Intelligence system

- **Data Warehouse:** Central repository for storing and managing data from multiple sources.
- **ETL Process:** Extract, transform, load process for preparing data for analysis.
- **Dashboards and Reporting:** Visual representation of data for quick decision-making.
- **Self-Service Analytics:** Tools that allow non-technical users to explore data and generate reports.

Tools and techniques for data-driven decision making.

Data Analytics Tools

Tools used in data analytics include;

- **Tableau:** Widely used for data visualization and interactive dashboards.
- **Power BI:** Microsoft's tool for data analytics, integrates with Excel and other platforms.
- **SAS:** Advanced analytics, data mining, and predictive analytics tool.
- **Python & R:** Open-source programming languages for statistical analysis and machine learning.

NB Choosing the right tool depends on business needs and complexity of analysis.

Tools and techniques for data-driven decision making.

BI Tools

Commonly used Business Intelligence platforms

- **Microsoft Power BI:** Easy-to-use tool for creating interactive reports and visualizations.
- **QlikView:** Known for data discovery and interactive analysis.
- **Looker:** A cloud-based BI platform for real-time data exploration.
- **SAP BusinessObjects:** Enterprise-level tool for comprehensive BI solutions.
- **Integration:** BI tools need to integrate seamlessly with existing data sources and systems.

Tools and techniques for data-driven decision making.

Data Visualization Techniques

- **Clarity:** Use simple charts (e.g., bar, line, pie) to communicate insights clearly.
- **Relevance:** Only show data that supports key business decisions.
- **Consistency:** Use consistent colors, fonts, and formats for easier interpretation.
- **Storytelling:** Data visualizations should tell a clear and compelling story.
- **Common Pitfalls:** Avoid overloading charts with too much information or complex visuals.

Tools and techniques for data-driven decision making.

Data-Driven Culture

How to build a culture that prioritizes data-driven decision-making

- **Leadership Buy-In:** Leaders must champion data use at all levels of the organization.
- **Training:** Provide employees with the skills and tools to use data effectively.
- **Access:** Ensure that all decision-makers have access to the data they need.
- **Metrics:** Establish key metrics to measure success and progress.
- **Collaboration:** Encourage cross-departmental sharing of data and insights.

Tools and techniques for data-driven decision making.

Automating Decision Making

How automation and AI can support data-driven decisions

- **AI and Machine Learning:** Automating data analysis to provide real-time insights.
- **Predictive Analytics:** Using algorithms to forecast trends and outcomes.
- **RPA (Robotic Process Automation):** Automating repetitive tasks (e.g., data entry, report generation).
- **Benefits:** Faster decision-making, improved accuracy, and reduced operational costs.
- **Challenges:** Ensuring data quality and handling complex or ambiguous data.

Tools and techniques for data-driven decision making.

Comparing different tools and techniques for data analytics and BI

- **When choosing tool, the compression can be done basing on;**
- **Cost:** Open-source vs. commercial tools, licensing fees, etc.
- **Ease of Use:** Tools that require little technical expertise vs. advanced programming.
- **Scalability:** Ability to handle large volumes of data and grow with business needs.
- **Integration:** Compatibility with existing systems and data sources.
- **Business Nature:** Depends on business size, needs, and technical capabilities.

Key notes

- **Data is Essential:** Data is a critical asset for modern businesses to make informed decisions.
- **Data Analytics & BI Tools:** These tools transform raw data into actionable insights.
- **Real-World Applications:** Data analytics and BI drive success in various industries, improving decision-making, efficiency, and innovation.
- **Adopt a Data-Driven Approach:** To remain competitive, organizations must embrace data-driven decision-making and foster a data culture.

Conclusion

In conclusion, data analytics and business intelligence (BI) are essential tools for modern enterprises, enabling them to transform vast amounts of raw data into actionable insights that drive better decision-making, operational efficiency, and competitive advantage. By leveraging these technologies, businesses can optimize processes, personalize customer experiences, and stay ahead in a data-driven world. Fostering a data-centric culture and adopting the right tools and techniques are key to unlocking the full potential of data and ensuring long-term business success.

Summary

Data Analytics and Business Intelligence:

- Role of data in digital enterprises,
- Introduction to data analytics and business intelligence (BI),
- Tools and techniques for data-driven decision making.

References

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THANKS

