

Decision-Making Technology

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Master's degree title: Business Intelligence and Optimization

Semester:S3

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Subject title:Decision-making technology

Credits: 3

Coefficients:1

Teaching objectives

Develop skills in implementing tools enabling the homogeneous and coherent management of companies' information systems (IS), in particular for the commercial management of the production chain for the sale of a product.

Content of the subject:

- Computer engineering of decision making
- Overview of the software components of a decision-making information system (CRM, Customer Relationship Marketing), ERP (Enterprise Resource Planning), BI (Business Intelligence).
- Extraction, transformation and loading of data: ETL techniques and tools
- Multidimensional analysis tools
- Reporting and exploration tools (e.g. Business Object)

Assessment method:

- Medium-term exams, practical work, mini-project

References:

- <http://fablain.developpez.com/tutoriel/presenterp/>
- <http://www.commentcamarche.net/contents/entreprise/erp.php3>
- <http://www.erp-infos.com/article/m/268/erp-or-decision-making-platform--which-drives-.html>

Introduction to Decision Technology

Improve your decisions with
Business Intelligence

Definition of Business Intelligence

Business Intelligence (BI) is a set of technologies, processes, and tools that enable organizations to collect, analyze, and present data to support decision making.

Objectives of BI

- Improve decision making.
- Optimize operations.
- Identify trends and opportunities.
- Gain competitiveness.

BI Components

- . Extract, Transform and Load (ETL).
- . Data warehouses.
- . Dashboards and reports.
- . Data mining and analytics.

BI Process

- Data collection.
- Transformation and cleaning.
- Storage in the data warehouse.
- Data analysis.
- Visualization and reporting.

Popular BI Tools

- . Microsoft Power BI.
- . Tableau Software.
- . QlikView/Qlik Sense.
- . IBM Cognos.
- . Oracle BI.
- . Pentaho

Benefits of BI

- . Informed decision making.
- . Cost reduction.
- . Improved operational efficiency.
- . Better understanding of customers.
- . Adaptation to market trends.

BI Challenges

- . Big data management.
- . Data security and confidentiality.
- . Complexity of implementation.
- . Staff training.

BI Trends

- . Integration of artificial intelligence.
- . Using Cloud Computing.
- . Self-service BI for users.
- . Advanced data visualization.

Conclusion

- . Business intelligence technology is essential for effective decision making.
- . Businesses can leverage BI to stay competitive.

Introducing Pentaho

Pentaho is a comprehensive open source Business Intelligence (BI) suite that offers a range of tools to help businesses collect, analyze, visualize, and present their data. Here's a quick overview of Pentaho:

Open Source Origin

Pentaho is an open source solution, meaning it is free to use and can be customized to suit the needs of the business. This makes it accessible to a wide range of organizations.

Key Components

- **Pentaho Data Integration (PDI):** It is Pentaho's extract, transform and load (ETL) tool, allowing to collect, clean and integrate data from different sources.

- **Pentaho Business Analytics:** This component includes tools for creating reports, interactive dashboards and data visualizations.
- **Pentaho Data Mining (Weka):** It offers data mining and predictive analytics capabilities to identify patterns and trends in data.
- **Pentaho Metadata:** It allows you to create and manage metadata to facilitate data management and analysis.

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Integration and Interoperability

Pentaho is designed to integrate easily with other technologies and databases. It supports connections to a variety of data sources, including relational databases, data warehouses, big data sources, and web services.

Data Visualization

Pentaho offers advanced data visualization tools to create interactive dashboards and impactful reports. It supports a variety of charts and visualizations to help users understand their data more effectively.

Planning and Automation

Pentaho enables scheduling and automation of BI-related tasks, facilitating automatic report generation, data updates, and notifications.

Security and Access Management

It offers advanced security features to ensure that sensitive data is protected and access to information is well managed.

Community and Business Support

Pentaho has an active community of open source users and developers, but it is also available in a commercial version with professional support and advanced features for businesses.

Use in Various Sectors

Pentaho is used across many industries, including finance, healthcare, retail, manufacturing, and more, to improve decision making and operational efficiency.

Conclusion

Pentaho is a versatile solution that can be tailored to each company's specific Business Intelligence needs, whether for data collection, advanced analysis or interactive reporting.

Quick Overview of Power BI

Power BI is a Business Intelligence (BI) platform developed by Microsoft that allows businesses to collect, analyze, and visualize their data efficiently. Here is a brief overview of Power BI:

Integration with the Microsoft ecosystem

Power BI integrates seamlessly with other Microsoft products such as Excel, Azure, SQL Server, SharePoint, and Office 365, making it a natural choice for organizations that already use these tools.

Data Collection

Power BI allows you to connect to a variety of data sources, whether on-premises or in the cloud. It also offers options for importing and transforming data.

Creating Reports and Dashboards

Users can create interactive reports and custom dashboards using a user-friendly drag-and-drop interface. Graphical visualizations and interactive dashboards make it easy to understand data.

Data Analysis

Power BI offers advanced analytics capabilities, including data modeling, Data Analysis Expressions (DAX) calculations, and M language for data transformation.

Collaboration and Sharing

Reports and dashboards created with Power BI can be shared with other users in the organization, promoting collaboration and collective decision-making.

Artificial Intelligence and Predictive Analysis

Power BI integrates artificial intelligence (AI) and predictive analytics capabilities to help businesses identify trends and make decisions based on predictions.

Security and Data Management

The platform offers advanced security options including data access permission management, role-level security, and compliance with security standards such as GDPR (General Data Protection Regulation).

Cloud Services

Power BI offers cloud services (Power BI Service) that allow you to publish, share and collaborate on reports and dashboards online, accessible from any device connected to the Internet.

Free and Paid Versions

Power BI offers a free version as well as paid versions (Power BI Pro and Power BI Premium) with advanced features and administration options.

Use in various sectors

Power BI is used in a variety of industries, including finance, healthcare, retail, manufacturing, and others, to improve decision-making and operational efficiency.

Conclusion

Power BI is recognized for its ease of use and analytical power, making it a popular choice among businesses for data visualization and analysis.