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ICT-TEX course on Digital skills

Topic 8: Business Analytics

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ICT IN TEXTILE AND CLOTHING HIGHER EDUCATION AND BUSINESS

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8.1. Analytics and Classification Of Analytics

These slides are part of the topic on
“Topic 8: Business Analytics” of the course on
Digital skills in Textile and clothing industry.

Check also the other themes in this topic:

- 8.2. Business Analytics
- 8.3. Big Data and Analytics



Contents

1. Analytics and Classification of Analytics

- [Introduction to Analytics](#)
- [Classification of Analytics](#)
- [Descriptive Analytics](#)
- [Predictive Analytics](#)
- [Prescriptive Analytics](#)
- [Combination of different types of analytics](#)
- [Application of Analytics](#)



Introduction to Analytics

The Analytics:

- Represents tools and techniques to explore, analyze, and visualize data from different data sources.
- Uses raw unprocessed data (unstructured data and structured data) from different data sources
- Analyzes and Process data to derive valuable insights and extract knowledge



Introduction to Analytics

The Analytics:

- Visualizes data results to the user with the help of data visualization techniques
- Provides an informative way of understanding a valuable information
- Human decisions can be made or these tools can make fully automated decisions.



Introduction to Analytics

Analytics is related to:

- Detecting data
- Analyzing data
- Processing data
- Using data and interpretation
- Visualizing data results



Introduction to Analytics

- Definition of Analytics

Analytics represents *“the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions”*

- Davenport T H & Harris J G. *Competing on Analytics: The New Science of Winning*. Harvard Business School Press Boston, USA 2007. ISBN: 978-1-422-10332-6 (2007)



Introduction to Analytics

- Definition of Analytics

“Analytics is the process of developing actionable insights through problem definition and the application of statistical models and analysis against existing and/or simulated future data”

- Cooper, A.: *CETIS Analytics Series: What is Analytics? Definition and Essential Characteristics, CETIS Analytics Series Vol 1, No 5., The University of Bolton, UK 2012, ISSN 2051-9214 (2012)*



Introduction to Analytics

- Definition of Analytics

“Analytics can be defined as a process that involves the use of statistical techniques (measures of central tendency, graphs, and so on), information system software (data mining, sorting routines), and operations research methodologies (linear programming) to explore, visualize, discover and communicate patterns or trends in data”

- Schniederjans, M., Schniederjans, D. and Starkey, C.: Business Analytics Principles, Concepts and Applications: What, Why, and How. Pearson FT Press, USA 2014, ISBN: 978-0-13-355218-8 (2014)



Classification of Analytics

One of the most common classifications and accepted by the scientific community is the one that divides Analytics into the following categories:

- Descriptive Analytics
- Predictive Analytics
- Prescriptive Analytics
- Combination



Classification of Analytics

Descriptive Analytics:

- Descriptive Analytics basically describes what happened in the past, without providing context, why an event occurred or if that event is likely to happen again in the future.
- They try to answer the questions:
 - What has happened?
 - What is happening?



Classification of Analytics

Descriptive Analytics:

- Their activity is carried out by applying statistical techniques that describe what is the content of a particular piece of data or database.
- Such as:
 - **Standard reporting** - to try to answer the question: What happened?
 - **Query/Drill down** - to try to answer the question: Where exactly is the problem?
 - **Ad hoc reporting** – to try to answer the questions: How often? How many? Where? And many others.



Classification of Analytics

Descriptive Analytics:

- The analysis is possible thanks to:
 - Alerts
 - Reports
 - Dashboards
 - Business Intelligence
 - And others examples



Classification of Analytics

Predictive Analytics:

- Present models for analyzing the past to predict the future and provide some explanation for the occurrence of an event.
- The purpose is to answer the questions:
 - What can happen?
 - Why will it happen?
 - What has happened?
 - What is happening?



Classification of Analytics

Predictive Analytics:

- Try to understand the future by using statistical models and forecasting techniques.
- Such as:
 - Predictive modeling - to answer the question: What will happen next?
 - Forecasting - to answer the question: What if these trends continue?
 - Simulation - to answer the question: What could happen?
 - Alerts - to answer the question: What actions are needed?



Classification of Analytics

Predictive Analytics:

- The analysis is possible thanks to:
 - Predictive models
 - Forecasts
 - Statistical analysis
 - Scoring
 - And others examples



Classification of Analytics

Prescriptive Analytics :

- Prescriptive Analytics are useful tools in determining what to do next as a result of an event and provide evidence of the most optimal level of key variables to achieve a particular desired and expected outcome.
- The purpose is to answer the questions:
 - What should happen?
 - What must be done?
 - Why should I do it?



Classification of Analytics

Prescriptive Analytics :

- Prescriptive Analytics tools mainly use optimization and simulation algorithms to make a recommendation for a possible result.
- Such as:
 - **Optimization** - to try to answer the question: What is the best possible outcome?
 - **Random variable optimization** - to try to answer the question: Given the variability in specific areas, what is the best outcome? And many others.

Classification of Analytics

Prescriptive Analytics:

- The analysis is possible thanks to:
 - Business rules
 - Organization models
 - Comparisons
 - Optimization
 - And others examples



Classification of Analytics

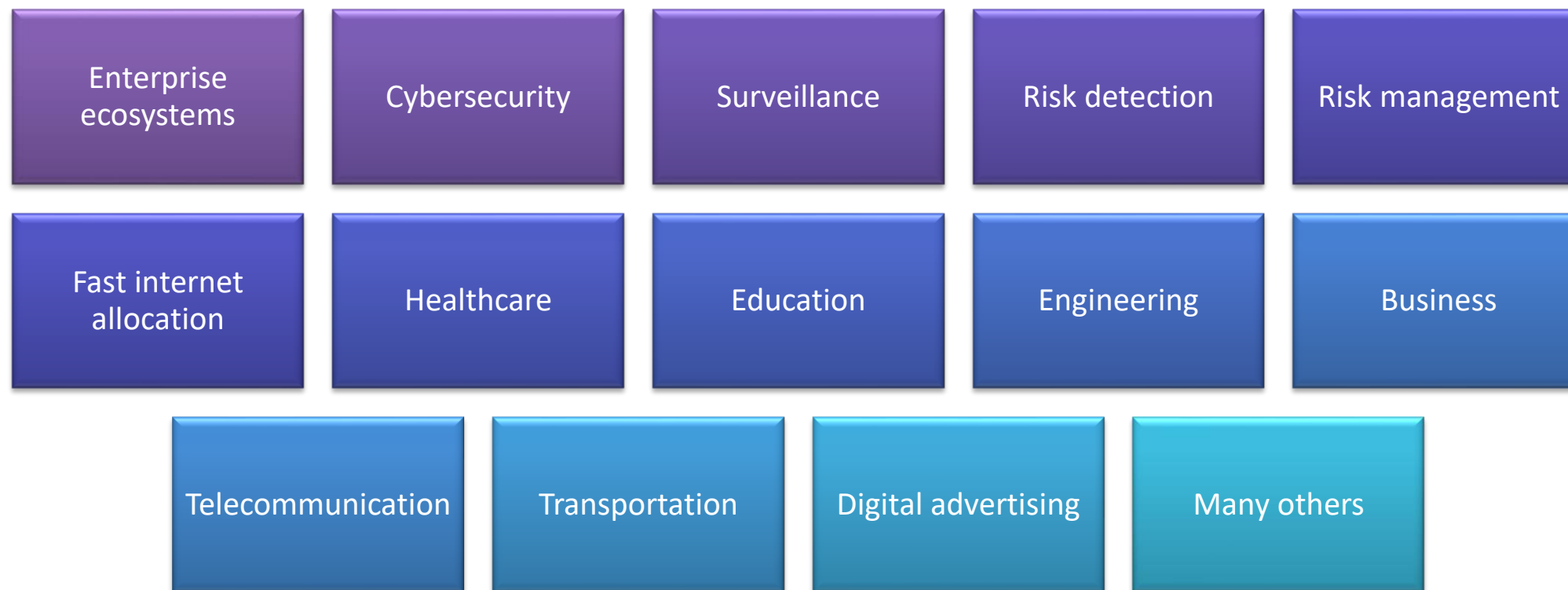
A combination of different types of analytics

- Many Analytics tools combine the functionalities of descriptive, predictive, or prescriptive analytics into their structures.
- There are existing other categories of Analytics tools such as Diagnostic analytics, Cognitive analytics, and many others. The analytics tools are constantly developing, thanks to researchers and practitioners.



Application of Analytics

- Analytics instruments are applied in different areas, such as:





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