Mohamed Khider University, Biskra, Faculty of Architecture, Civil Engineering, Hydraulics
Department of Architecture

Master 2 in **Construction Projects Management**
Course: **Data Analysis**

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About course

CHAPTER 04

Data Analysis: Exploitation of the Data Collected

Part 01

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Objectives Of The Chapter

At the end of the chapter, the learner will be able to:

- Explore how to convert raw data into actionable information.
- Familiarize with various tools of data analysis (e.g.,Spreadsheet Software , Qualitative Data and Survey Tools…) to exploit data effectively.
- Learn the basics of using SPSS, including navigating its interface and utilizing its core functions for data analysis.
- Become familiar with the NVivo interface and its fundamental features for qualitative data analysis and coding.





About course

Chapter Content

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I-Data analysis tools

I-1-What are data analysis tools

I-2-Types of data analysis tools

- 2-1-Spreadsheet Software
- 2-2-Data Visualization Tools
- 2-3-Statistical Analysis Software
- 2-4-Qualitative Data and Survey Tools

I-3- Choosing the right analysis data tool

II-Analyzing Quantitative Data with SPSS (Introduction to SPSS)

II-1-Overview of SPSS

- II-1-1-What is SPSS?
- II-1-2-Why use SPSS for quantitative data analysis?

II-2-The SPSS interface

II-3-Step-by-Step SPSS Data Analysis Process

- Step 1: Prepare Your Data
- Step 2: Getting data into SPSS
- Step 3: Data Analysis

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III-Analyzing Qualitative Data with Nvivo (Introduction to Nvivo)

II-1-Overview of NVivo

- II-1-1-What is NVivo?
- II-1-2-Why Use NVivo for Qualitative Data Analysis?

II-2-NVivo Download

II-3-Explore the NVivo Interface

II-4-Step-by-Step NVivo Data Analysis Process

- Step 1: Set Up a New Project
- Step 2: Organize Data
- Step 3: Import Data
- Step 4: Creating Codes and Coding
- Step 5: Query Data
- Step 6: Analyze Data
- Step 7: Export Results







Data Analysis Tools

1.What are data analysis tools?

Data analysis tools are **software programs**, **applications**, and other **aids** that professionals use to analyze data sets in ways that characterize the big picture of the information and provide usable information for meaningful insights, predictions, and decision-making purposes.



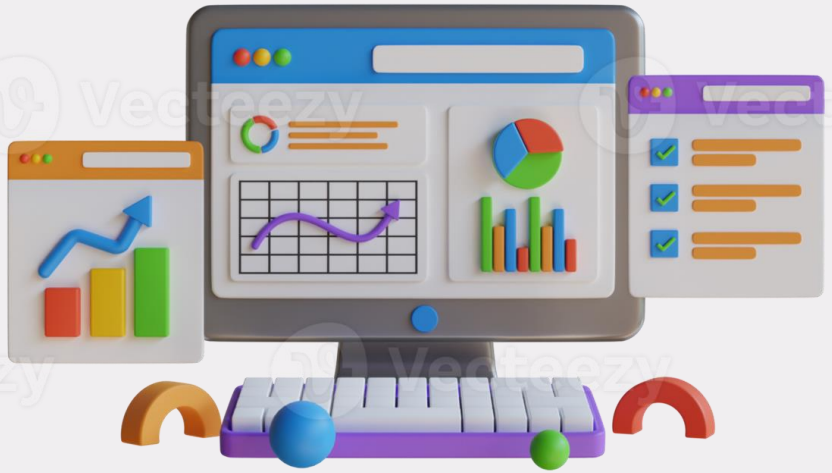


You can describe them as a **collection of maps, diagrams, and charts designed to gather, interpret, and visualize data across diverse applications**. Choosing the right data analysis tool is essential to maximize your efforts and make it easier to meet your goals

2. Data Analysis Tools Types

These tools provide a range of functionalities to handle data manipulation, visualization, statistical analysis, and machine learning. Here are some commonly used data analysis tools:

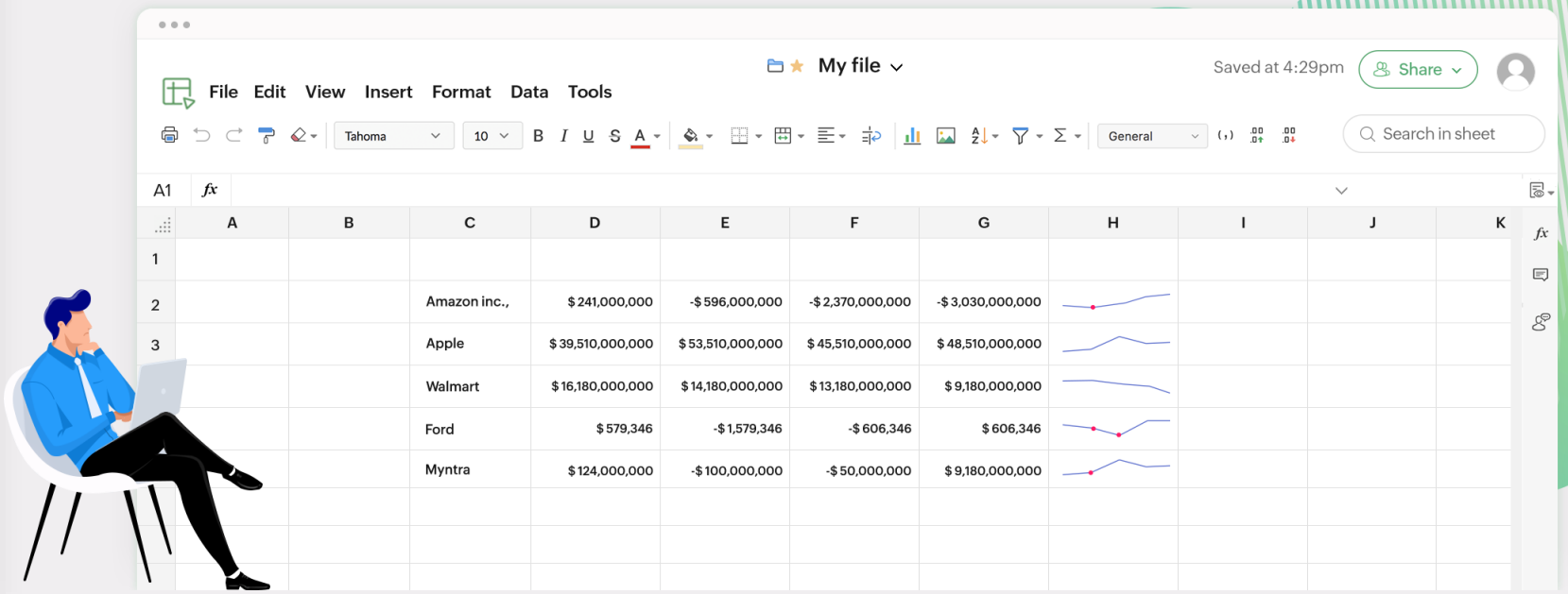
- ❑ Spreadsheet Software
- ❑ Data Visualization Tools
- ❑ Statistical Analysis Software
- ❑ Qualitative Data and Survey Tools….ect.



2. Data Analysis Tools Types

1-Spreadsheet Software

Spreadsheet Software is a type of application that allows users to **organize, manipulate, and analyze data in tabular form**, using **a grid of rows and columns**. Each cell in the grid can contain text, numbers, or formulas that perform calculations based on the data in other cells. Spreadsheet software is widely used for tasks such as budgeting, data tracking, statistical analysis, and creating charts and graphs for data visualization.



2. Data Analysis Tools Types

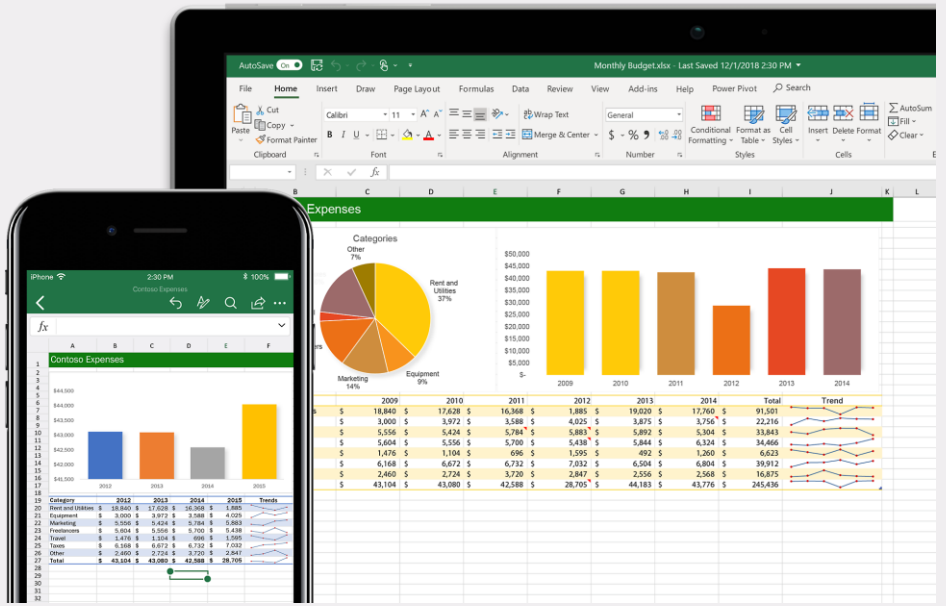
Common Examples:

Microsoft Excel

The most widely used spreadsheet software, known for its extensive features and capabilities.

It is a popular tool for organizing data, performing calculations, and creating simple charts; often used for smaller datasets.





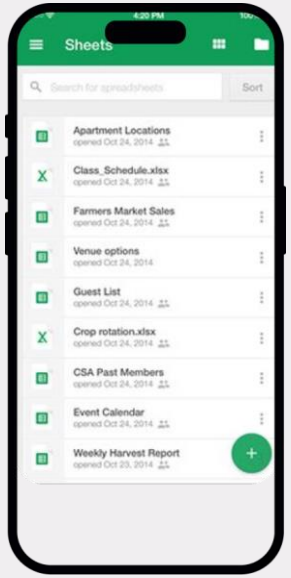
2. Data Analysis Tools Types

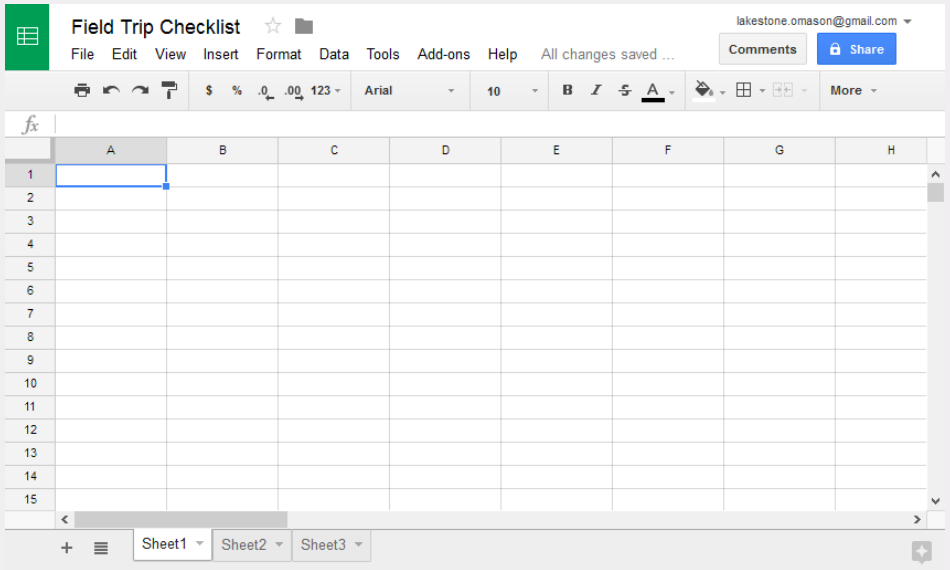
Common Examples:

Google Sheets

A cloud-based spreadsheet application that enables real-time collaboration and easy sharing of documents.
Similar to Excel, but cloud-based, allowing multiple people to work on the same file in real-time.

Google Sheets

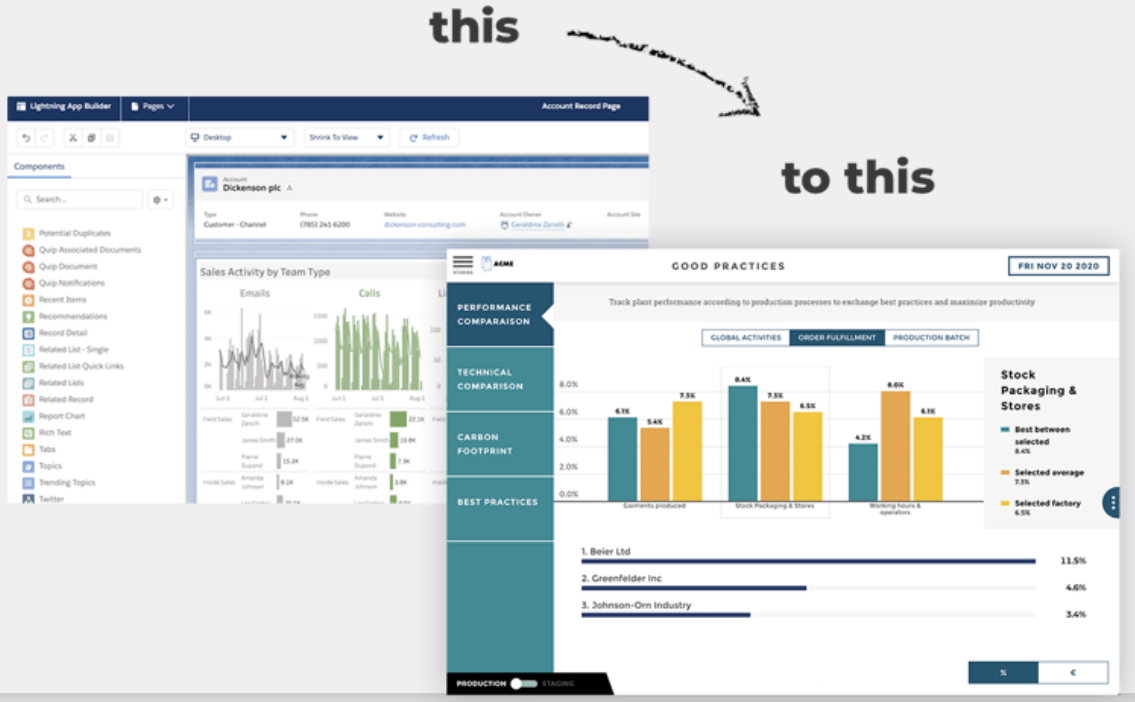




2. Data Analysis Tools Types

2-Data Visualization Tools

Data Visualization Tools are software applications designed **to transform complex data sets into visual representations**, such as charts, graphs, maps, and dashboards. These tools help users understand and interpret data by presenting it in a visually appealing and easily digestible format, enabling quicker insights and better decision-making.

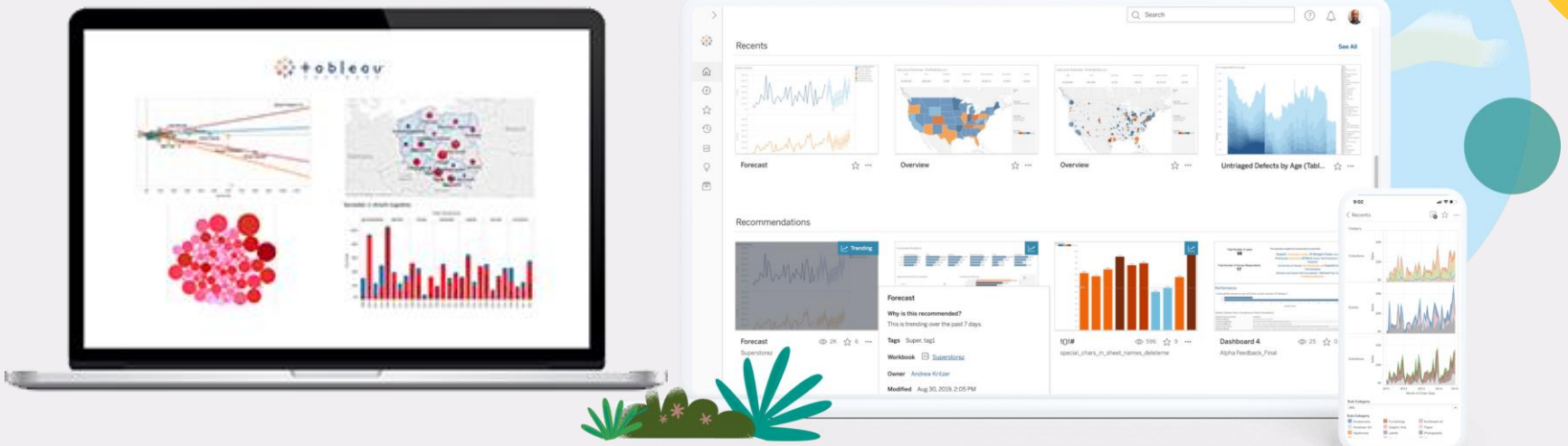


2. Data Analysis Tools Types

Common Examples:

Tableau

A tool for creating visual representations of data, such as charts and dashboards, to make data easier to understand.
Tableau allows users to connect to various data sources, analyze complex datasets, and visually represent data in a way that is easy to understand for both technical and non-technical users



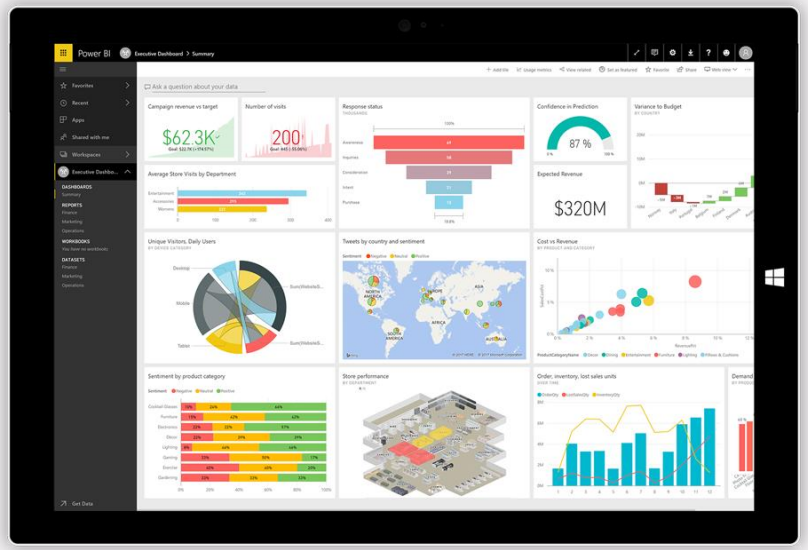
2. Data Analysis Tools Types

Common Examples:

Power BI

Power BI is a data analysis and visualization tool by Microsoft that allows users to connect to different data sources, create interactive dashboards, and share insights. It helps turn complex data into clear visual reports. The desktop version is free, but collaboration and sharing features require a paid license

Power BI



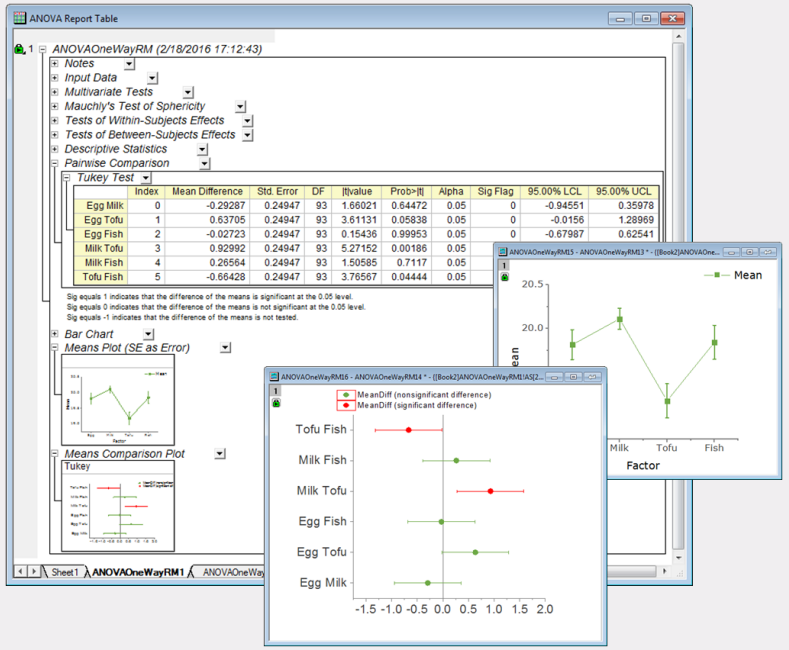


2. Data Analysis Tools Types

3-Statistical Analysis Software

Statistical Analysis Software is a type of program that helps users perform statistical analyses on data. These tools make it easier to understand and interpret data by providing various statistical functions and methods.



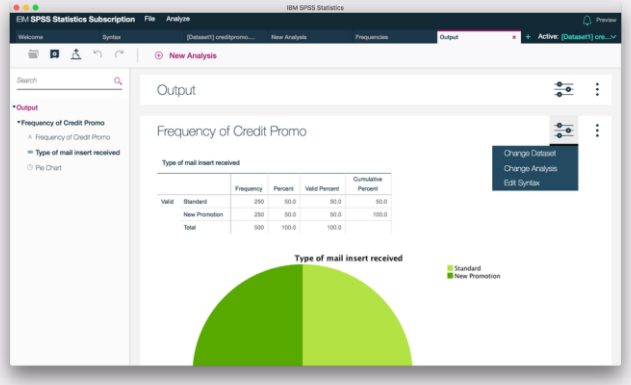


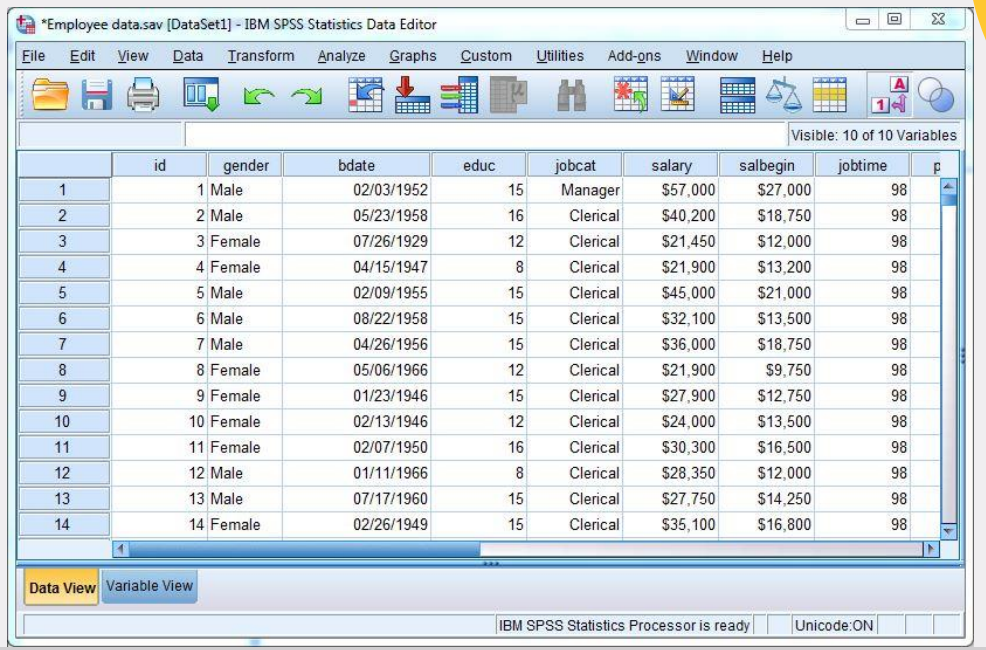
2. Data Analysis Tools Types

Common Examples

SPSS

SPSS (Statistical Package for the Social Sciences) is a widely-used software suite for data analysis, particularly in the fields of social sciences, psychology, business, and health research. It offers a range of statistical and analytical tools for managing, analyzing, and visualizing data. SPSS is known for its ease of use and comprehensive statistical capabilities.





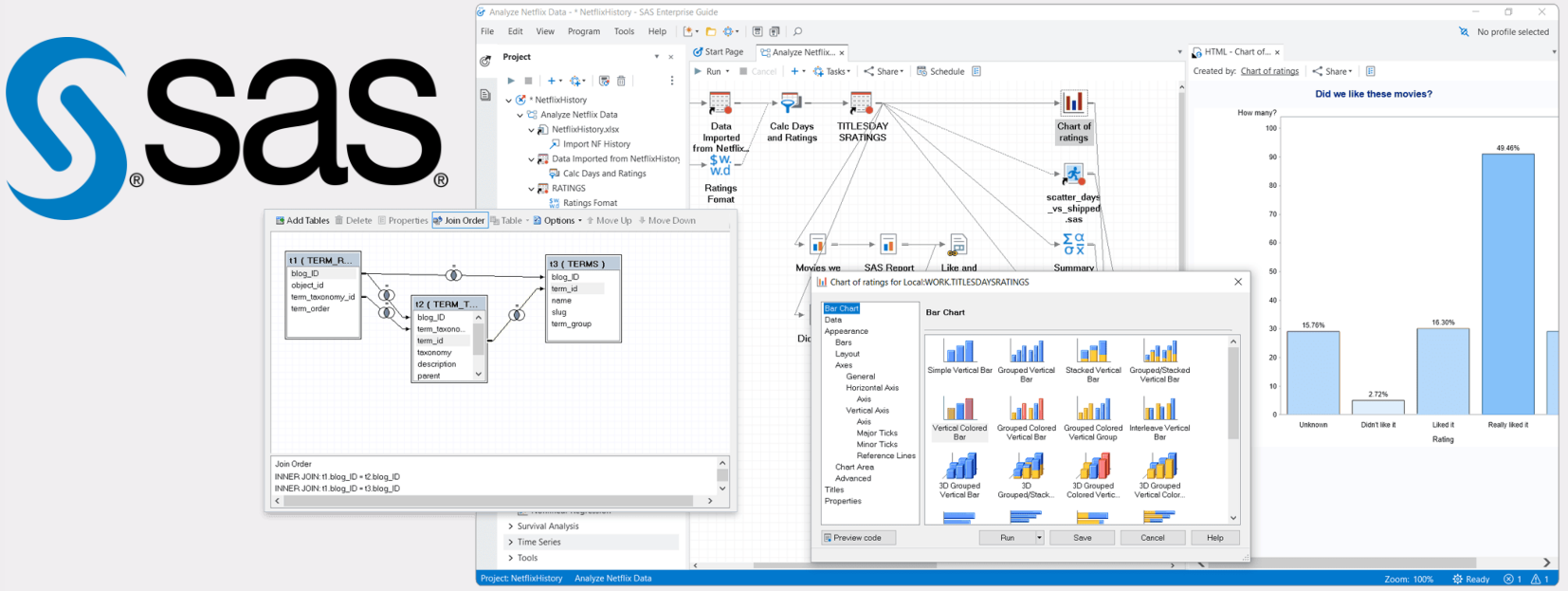
	id	gender	bdate	educ	jobcat	salary	salbegin	jobtime	p
1	1	Male	02/03/1952	15	Manager	$57,000	$27,000	98	
2	2	Male	05/23/1958	16	Clerical	$40,200	$18,750	98	
3	3	Female	07/26/1929	12	Clerical	$21,450	$12,000	98	
4	4	Female	04/15/1947	8	Clerical	$21,900	$13,200	98	
5	5	Male	02/09/1955	15	Clerical	$45,000	$21,000	98	
6	6	Male	08/22/1958	15	Clerical	$32,100	$13,500	98	
7	7	Male	04/26/1956	15	Clerical	$36,000	$18,750	98	
8	8	Female	05/06/1966	12	Clerical	$21,900	$9,750	98	
9	9	Female	01/23/1946	15	Clerical	$27,900	$12,750	98	
10	10	Female	02/13/1946	12	Clerical	$24,000	$13,500	98	
11	11	Female	02/07/1950	16	Clerical	$30,300	$16,500	98	
12	12	Male	01/11/1966	8	Clerical	$28,350	$12,000	98	
13	13	Male	07/17/1960	15	Clerical	$27,750	$14,250	98	
14	14	Female	02/26/1949	15	Clerical	$35,100	$16,800	98	

2. Data Analysis Tools Types

Common Examples

SAS

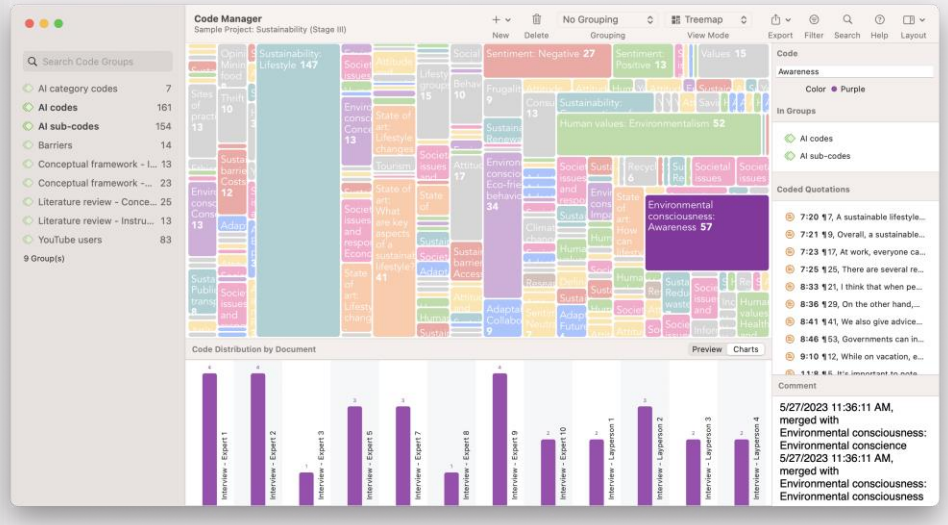
SAS (Statistical Analysis System) is a software suite used for advanced data management, statistical analysis, and predictive analytics. It helps users process large datasets, perform complex analyses, and generate reports. SAS is widely used in industries such as healthcare, finance, and marketing for data-driven decision-making.

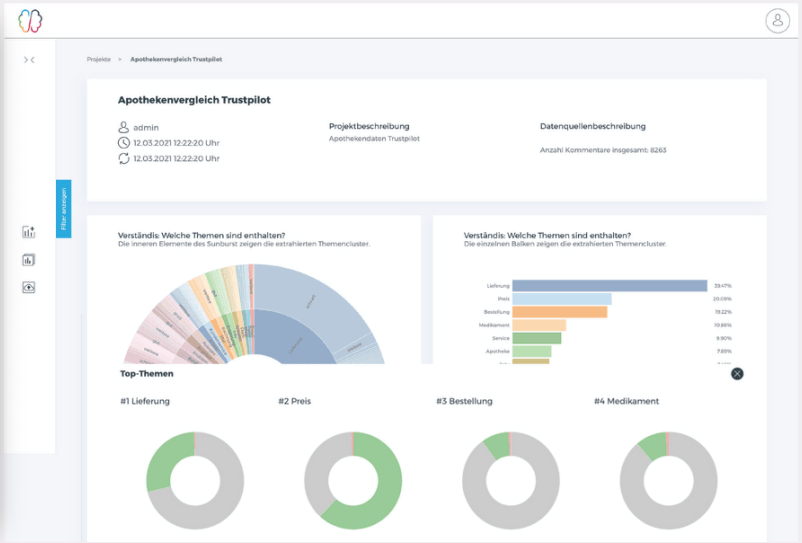


2. Data Analysis Tools Types

4- Qualitative Data and Survey Tools

Qualitative Data and Survey Tools are software applications designed to help **users collect**, **analyze, and interpret qualitative data and survey responses**. These tools facilitate the process of gathering insights from participants, whether through structured surveys or unstructured qualitative research, enabling researchers to understand **opinions, behaviors, and experiences.**





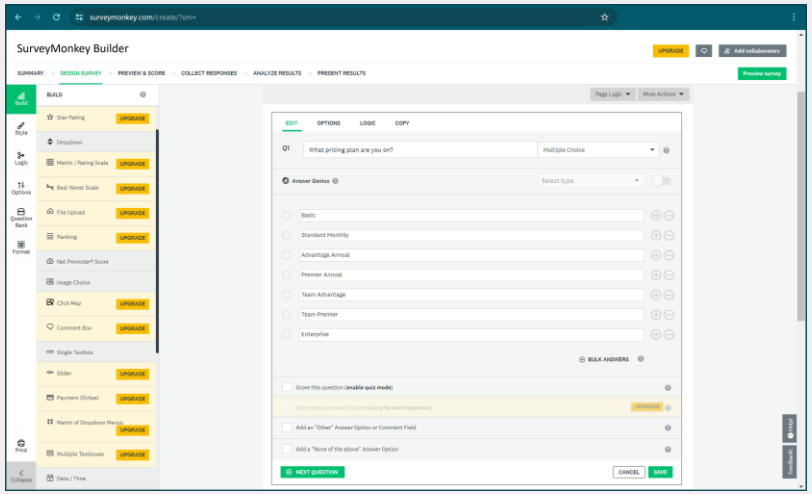
2. Data Analysis Tools Types

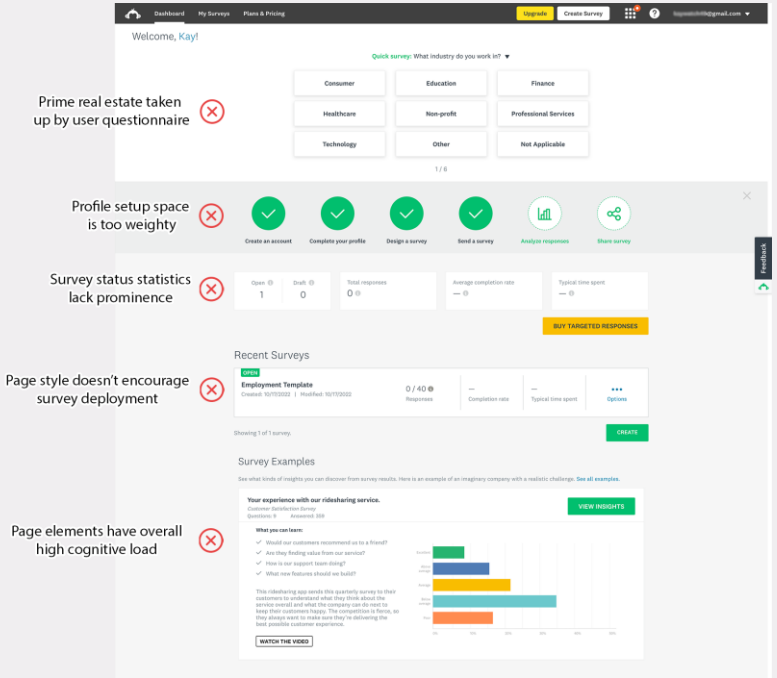
Common Examples

SurveyMonkey

SurveyMonkey is an online survey tool that allows users to create, distribute, and analyze surveys. It offers a wide range of templates and customizable options to design surveys for collecting data from respondents. It offers both free and paid plans with various features depending on the user's needs.

SurveyMonkey®





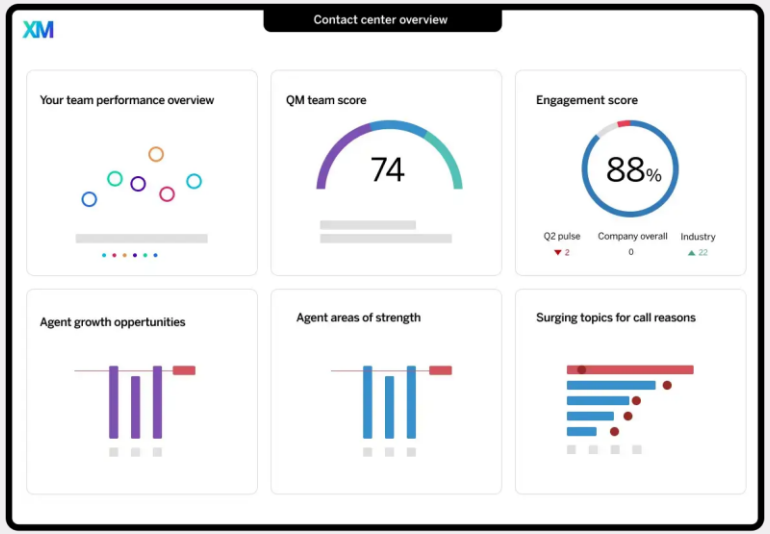
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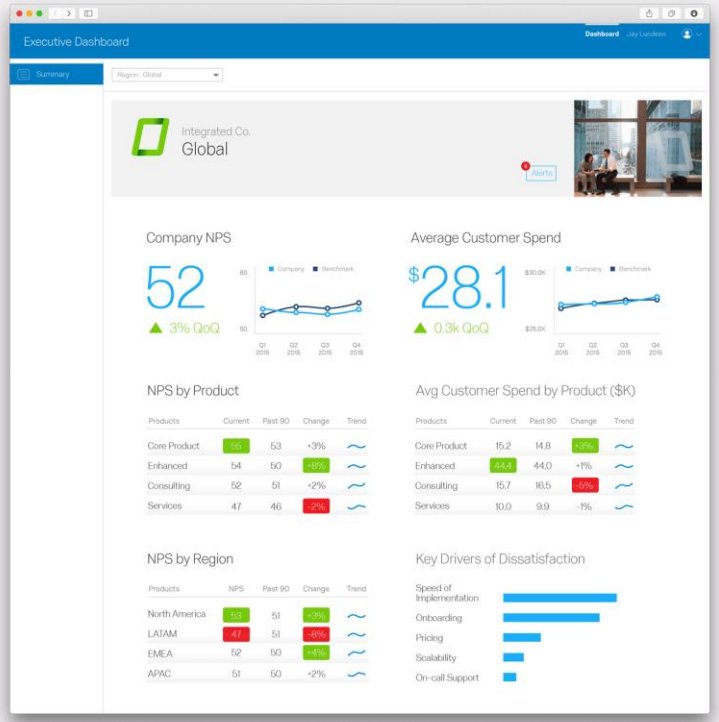
Common Examples

Qualtrics

Qualtrics is an online platform for creating surveys and collecting feedback. It helps businesses and researchers gather data from customers, employees, or any target group. Qualtrics offers tools to create customizable surveys, analyze the responses, and generate reports.

qualtrics XM



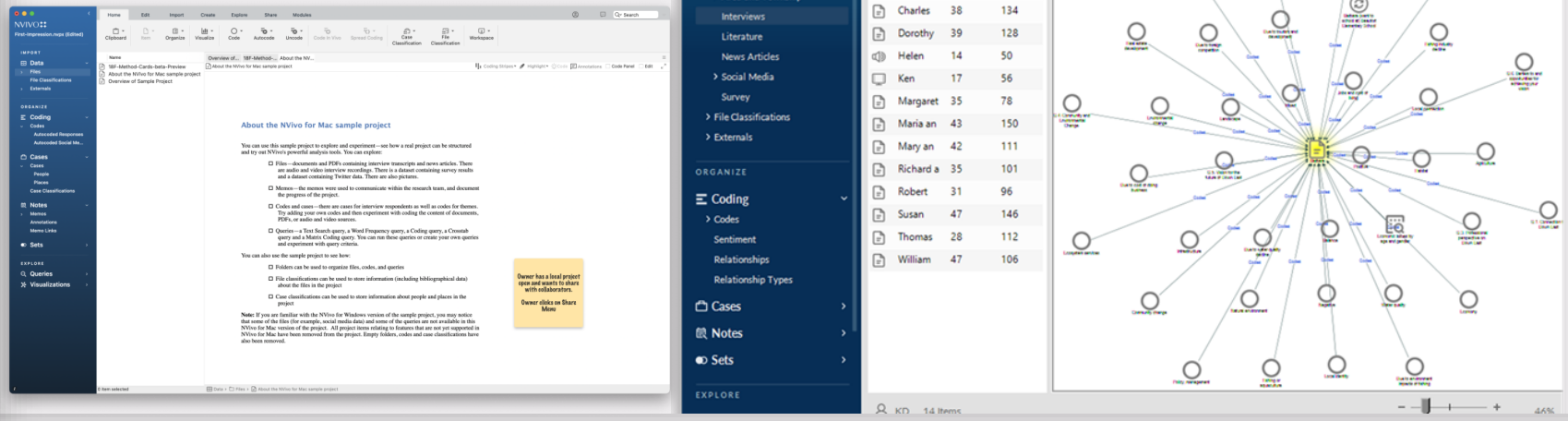


2. Data Analysis Tools Types

Common Examples

NVivo

NVivo is a software tool used for analyzing qualitative data, such as interviews, open-ended survey responses, articles, and audio/video content. It helps researchers organize, code, and interpret large amounts of unstructured data to uncover patterns and insights. NVivo offers tools for data visualization, reporting, and the creation of models to better understand complex data sets.



03 Choosing the right analysis data tool

Selecting the right data analysis tool depends on various factors such as:

1- Define Your Data Type and Size:

•**Small to Medium Data**: If you're dealing with small datasets, tools like **Google Sheets**, **Excel**, or **SurveyMonkey** are suitable.

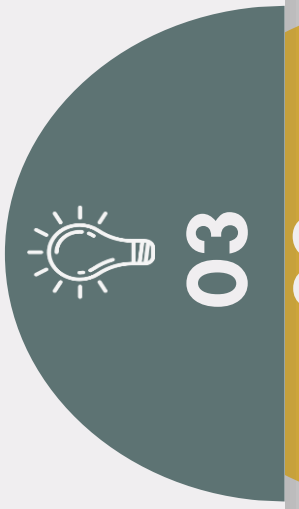
•**Large and Complex Data**: For large datasets or big data, consider using tools like **SPSS**, **SAS**, **R**, or **Tableau** that can handle large volumes and complex data structures.



03 Choosing the right analysis data tool

2-Identify Your Analysis Needs:

•**Descriptive Analysis**: If your focus is on basic statistics or creating simple visualizations, tools like **Excel**, **Google Sheets**, and **Tableau** are sufficient.
•**Advanced Statistical Analysis**: For in-depth statistical analysis, predictive modeling, and hypothesis testing, tools like **SPSS**, **R**, and **SAS** are better suited.
•**Qualitative Data**: If you're analyzing qualitative data (e.g., interviews, surveys), tools like **NVivo** or **Qualtrics** are ideal.



3-Consider Ease of Use:

•**Beginner Friendly**: If you're new to data analysis, look for tools with user-friendly interfaces like **Google Sheets**, **Excel**, or **Power BI**.
•**Advanced Users**: For experienced analysts or data scientists, tools like **R**, **SAS**, and **SPSS** offer more advanced capabilities but may require more expertise.

03 Choosing the right analysis data tool

4-Cost and Budget:

•**Free Tools**: If you have a limited budget, start with free tools like **Google Sheets**.
•**Paid Tools**: If your project requires more advanced capabilities, you might need to invest in tools like **SPSS**, **SAS**, **Tableau**, or **Power BI**.

By considering these factors, you can select the most appropriate tool that enhances your ability to analyze data effectively and make informed decisions.



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Webography

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Thank You!