

Course 4: Practical Data Analysis for SMEs

A Hands-On Workshop for Data-Driven Decision Making

Course Prerequisite: Course 1: AI & Prompt Engineering for SMEs

Primary Resource: N/A. Course is based on practical application and selected readings/tools provided by the trainer.

1. Course Overview

For many SMEs, "data analysis" sounds like a luxury reserved for large corporations with teams of data scientists. This course shatters that myth. Designed for the business leader, not the statistician, this workshop focuses on **unlocking the value hidden in the data you already have**. We will explore practical, accessible methods for collecting, cleaning, and analyzing business data using tools you are already familiar with (like spreadsheets) supercharged with the power of AI. Participants will learn how to ask the right questions of their data, use AI to uncover trends and patterns, and create compelling visualizations that tell a story. The goal is to empower every SME to move from gut-feel decisions to strategies backed by clear, actionable insights derived from their own operations.

2. Learning Objectives

Upon successful completion of this course, participants will be able to:

- **Remember & Understand:**
 - Define key data concepts: quantitative vs. qualitative data, correlation vs. causation.
 - Identify at least five common sources of valuable data within their own SME (e.g., sales records, website analytics, customer feedback).
 - Explain the importance of data quality ("garbage in, garbage out").
- **Apply:**
 - Use AI tools (like ChatGPT, Advanced Data Analysis, or similar) to clean and standardize a simple dataset.
 - Perform basic descriptive analysis on a dataset to find the mean, median, and mode.
 - Craft effective prompts to ask AI to analyze a dataset and summarize key findings.
- **Analyze:**
 - Examine a dataset to identify outliers, trends, and potential relationships

between variables.

- Compare different data visualization types (bar chart, line graph, pie chart) and select the most appropriate one for a given message.

- **Evaluate & Create:**

- Critically assess the insights generated by an AI analysis for business relevance and potential biases.
- Create a simple, one-page "Business Insights Dashboard" using data visualizations to answer a specific business question.

3. Course Schedule & Modules

Total Duration: 8 hours (including breaks)

Time	Module	Topics & Sub-topics	Trainer Activity	Trainee Activity
9:00 - 9:45	Module 1: The Data-Driven SME	- Welcome & The "Good Enough" Data Mindset- From Anecdotes to Evidence: Why data matters- Where is Your Data Goldmine? Identifying sources	- Tell a story of a company that transformed with a simple data insight- Lead a guided brainstorming session on data sources- Set the tone: "progress over perfection"	- Share one business question they wish they could answer with data- Activity: List all the places their business generates data (CRM, accounting software, website, etc.)
9:45 - 11:00	Module 2: Asking the Right Questions	- The Art of the Business Question: From vague to specific- Metrics That Matter: Defining Key Performance Indicators (KPIs)- Hypothesis-Driven Analysis: Making an educated guess	- Introduce the "SMART" framework for questions- Provide examples of good vs. bad business questions- Facilitate a workshop on defining KPIs	- Activity: Refine their initial business question into a specific, measurable, actionable, relevant, and time-bound (SMART) question. Define 1-2 KPIs related to it.
11:00 - 11:15	Coffee Break			

11:15 - 12:30	Module 3: Data Prep with AI	<p>- "Garbage In, Garbage Out": The importance of clean data- Hands-on Lab 1: Cleaning a "Dirty" Spreadsheet using AI- Common tasks: handling missing values, standardizing formats, removing duplicates</p>	<p>- Provide a sample "dirty" dataset (e.g., sales data with typos)- Live demo: Upload the sheet to an AI tool and use prompts to clean it step-by-step- Explain the logic behind each cleaning step</p>	<p>- Activity: Participants take the same dirty dataset and use AI prompts to clean it on their own laptops.</p>
12:30 - 13:30 Lunch Break				
13:30 - 15:00	Module 4: AI-Powered Analysis & Insight Generation	<p>- Prompting for Insights: How to ask AI to analyze data- Types of Analysis: Trend, segmentation, correlation- Hands-on Lab 2: Analyzing Your Clean Data</p>	<p>- Provide a "cookbook" of prompts for data analysis- Live demo: Prompting an AI to find the top 5 products, identify sales trends over time, and segment customers- Facilitate the hands-on lab</p>	<p>- Activity: Using their cleaned dataset from Module 3, participants use AI prompts to answer their specific business question from Module 2.</p>
15:00 - 15:15 Coffee Break				
15:15 - 16:30	Module 5: Telling Stories with Data	<p>- The Power of Visualization: A picture is worth 1000 numbers- Choosing the Right Chart- Hands-on Lab 3: Creating a Mini-Dashboard</p>	<p>- Show examples of effective and misleading charts- Live demo: Asking an AI to generate different chart types from the dataset- Introduce a simple dashboard template (e.g., in Google Slides or Canva)</p>	<p>- Activity: Select the most important insights from their analysis and choose the best chart for each. Create a 1-page dashboard presenting their findings.</p>



16:30 - 17:00	Module 6: From Insights to Action	- Presenting Your Findings: The 30-second summary- Avoiding Common Pitfalls: Correlation is not causation- Your Data Action Plan	- Facilitate a "Show & Tell" where participants share their dashboard- Lead a discussion on ethical data use- Summarize key concepts	- Practice explaining their dashboard to a partner in under a minute- Draft a plan for one action they will take based on their findings.
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4. Resources & Materials

- **Hardware:** Participants must bring their own laptops.
- **Software/Accounts:**
 - Access to a spreadsheet program (Google Sheets or MS Excel).
 - A premium account for an AI tool with data analysis capabilities (e.g., ChatGPT Plus, Claude Pro). The trainer should advise on this beforehand.
- **Handouts:**
 - Sample "dirty" dataset for cleaning exercises.
 - Data Analysis Prompt Cookbook.
 - Chart Selection Guide.
 - One-Page Dashboard Template.