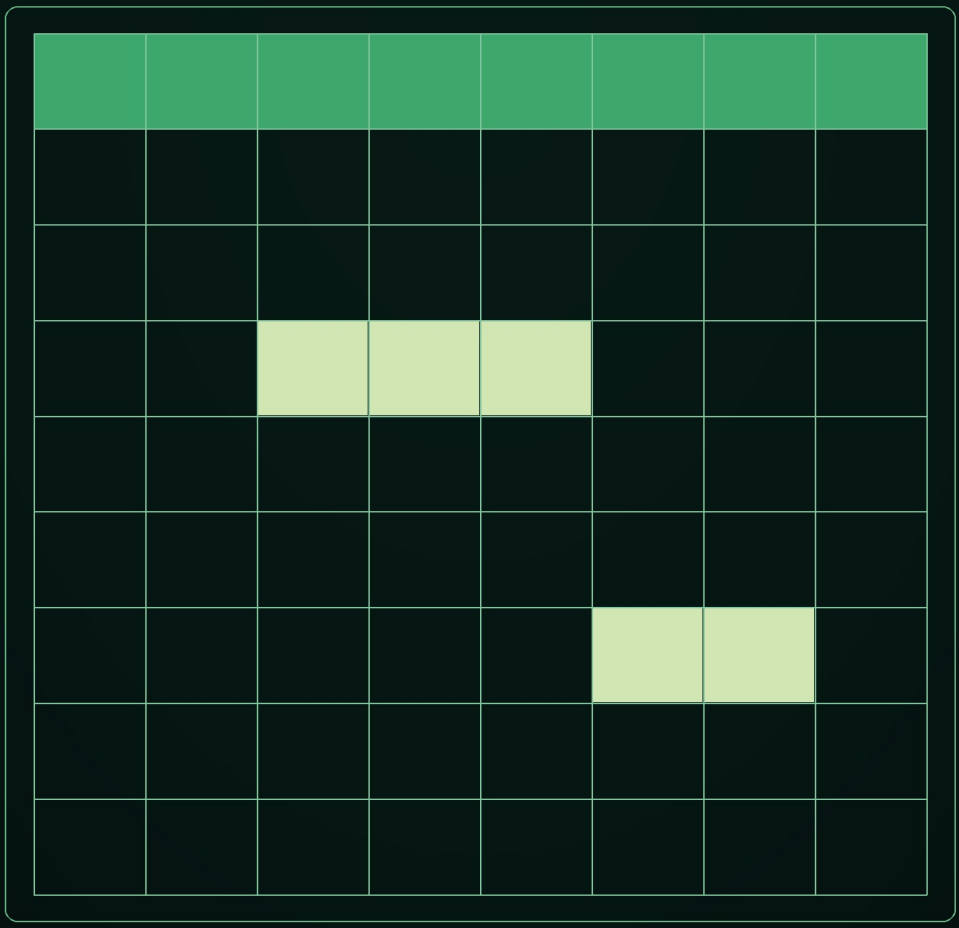
DATA ANALYTICS SERIES

BOOK 03

EXCEL FOR DATA ANALYSIS

A Practical Guide to Formulas, Data Cleaning, PivotTables, Power Query and Dashboards



FORMULAS · PIVOTTABLES · POWER QUERY

ANOOP GUPTA

Contents

Copyright	4
Disclaimer	5
How to Use This Book	6
Chapter 1: Introduction to Microsoft Excel for Data Analysis	7
Chapter 2: Data Cleaning and Preparation	34
Chapter 3: Essential Excel Formulas and Functions	64
Chapter 4: Logical Functions for Data Analysis	100
Chapter 5: Conditional Aggregation Functions	130
Chapter 6: Text Functions for Data Cleaning	164
Chapter 7: Date and Time Functions	207
Chapter 8: Lookup and Reference Functions	244
N/A	264
REF!	264
VALUE!	264
NAME?	264
N/A usually means that a matching value was not found.	265
Chapter 9: Dynamic Array Functions and Advanced Formulas	279
Chapter 10: Data Validation and Conditional Formatting	316
Chapter 11: Pivot Tables and Pivot Charts	353
Chapter 12: Power Query for Data Cleaning and Transformation	383
Chapter 13: Data Visualization and Professional Charts	416
Chapter 14: Building an Interactive Excel Dashboard	446
Chapter 15: Real-World Excel Data Analysis Projects	473
Chapter 16: Excel Interview Preparation and Job Readiness	505
Quick Reference Cheat Sheet	530
Practice Datasets	538
What to Learn Next	541

Excel for Data Analysis

A Practical Guide to Formulas, Data Cleaning, PivotTables, Power Query and Dashboards

Data Analytics Series, Book 3

Anoop Gupta

Copyright

Copyright © 2026 Anoop Gupta. All rights reserved.

No part of this publication may be reproduced, distributed, stored in a retrieval system or transmitted in any form or by any means without prior written permission from the copyright holder, except for brief quotations used in reviews, educational references or other uses permitted by applicable copyright law.

This book is an independent educational publication. It is not affiliated with, endorsed by or sponsored by Microsoft, Tableau, the Python Software Foundation, or any other software company, educational institution, professional body or organisation.

Product names and trademarks mentioned in this book belong to their respective owners and are used only for educational identification.

Disclaimer

This book is intended for educational and informational purposes only. It does not constitute professional career, employment, investment, financial, statistical, legal or business advice. It does not guarantee a job, a salary or a particular career outcome.

The examples, datasets, company names and figures used in this book are illustrative sample data unless explicitly stated otherwise. They are not real company results or labour-market statistics.

Software features, function names, menus, licences and interfaces change. Always check the official documentation for the tool you are using, and verify important calculations against original records and appropriate professional guidance.

How to Use This Book

Work through the chapters in order. Each chapter explains one idea, shows a worked example with sample data, then gives practice exercises, a short project and likely interview questions.

Type the formulas, queries or code yourself rather than only reading them. When a screen or menu name does not match your version of the software, look up the current official documentation instead of guessing.

Keep a simple practice folder for your workbooks, query files and notes. The Quick Reference Cheat Sheet and Practice Datasets at the end of the book, where provided, are there for revision after you finish the chapters.

Chapter 1: Introduction to Microsoft Excel for Data Analysis

1. In This Chapter

In this chapter, you will learn:

- What Microsoft Excel is and why data analysts use it.
- Understanding the Excel interface and Ribbon.
- Workbooks, worksheets, rows, columns and cells.
- Different types of data in Excel.
- Entering, editing and organizing data.
- Formatting datasets professionally.
- Saving, opening and managing Excel files.
- Essential Excel keyboard shortcuts.

1.1 What Is Microsoft Excel?

Microsoft Excel is a spreadsheet application developed by Microsoft. It allows users to store, organize, calculate, analyse and visualize data.

Excel organizes information into rows and columns. Each intersection of a row and column is called a cell.

For example, a business might maintain information about its products, customers, sales, purchases and expenses in Excel.

Consider a small retail business that records its daily sales.

Sample Data: Retail Sales

Date	Product	Quantity	Price	Total Sales
01-11-2026	Laptop	2	45000	90000
02-11-2026	Mouse	5	500	2500
03-11-2026	Keyboard	3	1200	3600
04-11-2026	Monitor	2	12000	24000
05-11-2026	Printer	1	8500	8500

All figures and business records in this book are illustrative sample data.

Using Excel, you can:

1. Calculate total sales.
2. Find the highest-selling product.
3. Compare daily sales.
4. Identify products with low sales.
5. Prepare monthly reports.
6. Create charts and dashboards.
7. Automate repetitive reporting tasks.

Excel is useful because it combines data storage, calculations, analysis and visualization in one application.

1.2 Why Excel Matters in a Real Data Analyst Job

A data analyst often receives information from different sources.

For example:

- Sales teams provide sales records.
- Finance teams provide expense reports.
- HR teams provide employee information.
- Marketing teams provide campaign results.
- Inventory teams provide stock reports.

This information may arrive in Excel, CSV or other formats.

Before analysing it, the analyst must understand and organize the data.

Excel helps perform several important activities.

1. Data Organization

You can arrange thousands of records into structured tables.

2. Data Cleaning

You can remove duplicates, correct spelling errors and handle missing values.

3. Data Analysis

You can use formulas, functions, Pivot Tables and other tools to understand business performance.

4. Reporting

You can create daily, weekly and monthly reports.

5. Visualization

You can present information through charts and dashboards.

6. Automation

Power Query can automate many repetitive data-cleaning and transformation steps.

For a beginner entering data analytics, Excel provides a practical foundation before learning SQL, Power BI and Python.

1.3 Understanding the Excel Interface

When you open Microsoft Excel and create a blank workbook, you will see several important sections.

Let's understand each section.

1.3.1 Title Bar

The Title Bar appears at the top of the Excel window.

It displays the workbook name.

For example:

`Sales_Report_November_2026.xlsx`

It also provides access to window controls and other options.

1.3.2 Quick Access Toolbar

The Quick Access Toolbar provides shortcuts to frequently used commands.

Common commands include:

- Save
- Undo

- Redo

You can customize this toolbar according to your requirements.

1.3.3 Ribbon

The Ribbon contains Excel's main commands, organized into tabs.

Important Ribbon tabs include:

Tab	Purpose
File	Open, save, print and manage files
Home	Formatting, clipboard and editing
Insert	Tables, charts and Pivot Tables
Page Layout	Page setup and printing
Formulas	Formula-related tools
Data	Sorting, filtering and data tools
Review	Comments and worksheet protection
View	Worksheet display and window options
Help	Excel help and support

Some commands may appear differently depending on your Excel version and platform.

1.3.4 Name Box

The Name Box appears to the left of the Formula Bar.

It displays the address of the currently selected cell.

For example:

`B5`

This means column B and row 5.

You can also use the Name Box to jump directly to a cell.

Practical example:

1. Click the Name Box.
2. Type `D20`.
3. Press Enter.

Excel will select cell D20.

1.3.5 Formula Bar

The Formula Bar displays the content or formula stored in the selected cell.

For example, if cell E2 contains:

```
=C2*D2
```

The Formula Bar displays that formula when E2 is selected.

You can use it to view and edit formulas or cell contents.

1.3.6 Worksheet Area

The Worksheet Area is the main working area.

It contains:

- Rows
- Columns
- Cells

This is where you enter and analyse data.

1.3.7 Sheet Tabs

At the bottom of the workbook, you will find worksheet tabs.

For example:

- Sales
- Purchases
- Expenses
- Summary

You can create multiple worksheets inside one workbook.

1.3.8 Status Bar

The Status Bar appears at the bottom of Excel.

When you select multiple numerical cells, Excel may automatically display:

- Average
- Count
- Sum

You can customize which calculations appear on the Status Bar.

1.4 Understanding Workbooks and Worksheets

Two important terms in Excel are Workbook and Worksheet.

Workbook

A workbook is the complete Excel file.

Example:

`Company_Report.xlsx`

Worksheet

A worksheet is an individual spreadsheet inside a workbook.

For example, one workbook may contain:

Worksheet	Information
Sales	Sales transactions
Purchases	Purchase transactions
Expenses	Business expenses
Inventory	Stock information
Dashboard	Business summary

Creating a New Worksheet

Follow these steps:

1. Open Excel.
2. Create a Blank Workbook.
3. Look at the bottom of the screen.
4. Click the plus (+) button beside the worksheet tabs.
5. A new worksheet will appear.

Renaming a Worksheet

1. Double-click the Sheet1 tab.
2. Type `Sales`.
3. Press Enter.

Deleting a Worksheet

1. Right-click the worksheet tab.
2. Select Delete.
3. Confirm the action if prompted.

Be careful: deleting a worksheet removes its contents.

1.5 Understanding Rows, Columns and Cells

Excel organizes information through rows and columns.

Rows

Rows run horizontally.

They are identified by numbers:

1, 2, 3, 4, 5...

Columns

Columns run vertically.

They are identified by letters:

A, B, C, D, E...

After column Z, Excel continues with AA, AB, AC and so on.

Cells

A cell is the intersection of a row and a column.

For example:

- A1 means column A, row 1.
- B5 means column B, row 5.
- D10 means column D, row 10.

Cell Range

A range is a collection of cells.

For example:

`A1:A10`

This represents cells A1 through A10.

`A1:D10`

This represents all cells from A1 to D10.

Ranges are important when calculating totals, averages and other results.

1.6 Understanding Data Types in Excel

Before analysing data, you must understand what type of information is stored in each cell.

Excel supports different types of cell content.

1.6.1 Text Data

Text includes names, descriptions and categories.

Examples:

- Priya Sharma
- Delhi
- Laptop
- Sales Department

Text is commonly used to identify or classify records.

1.6.2 Number Data

Numbers are used for mathematical calculations.

Examples:

- 100
- 2500
- 45000
- 75.50

You can perform calculations using numerical values.

1.6.3 Date Data

Excel stores valid dates as serial numbers internally and displays them using date formats.

Examples:

- 01-11-2026
- 15-11-2026
- 31-12-2026

Dates are useful for monthly, quarterly and yearly analysis.

1.6.4 Time Data

Excel also supports time values.

Examples:

- 09:30 AM
- 02:15 PM
- 06:45 PM

Time values can be used to analyse attendance, working hours and transaction timings.

1.6.5 Logical Data

Logical values include:

- TRUE
- FALSE

These are useful when creating conditions and testing business rules.

1.6.6 Formula Data

A formula performs calculations using cell references, values and functions.

Example:

Anoop Gupta Books

End of free sample – buy the full book at onlineebook.in/books/excel-for-data-analysis.html

This file is a free sample. The complete ebook is sold at onlineebook.in.