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TECH FOR JOBS

Support Session 2

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Agenda

- Excel References, Functions, and Keyboard Shortcuts

- Exercises

- Basic Queries in Excel

- Exercises

Overview

- Goal: Introduce key Excel concepts for managing book pricing and costs in a publishing setting.

- Context: Case study for indie publisher, "The Book Stash."

Data Overview

- Data Columns:
  - Book title, author, page count, paper weight, cover type, ink type, author royalties, and estimated demand.

- Cost Sheets:
  - Printing Costs: Varies by ink type and paper weight.

  - Cover Costs: Based on cover type.

Calculating Cost

- Components:
  - Printing Cost: Based on pages, ink type, and paper weight.

  - Cover Cost: Paperback costs only.

  - Fixed Costs: 0.80 USD per book.

- Formula Tip: Use absolute references (e.g., $B$2) to keep certain cells constant when copying formulas.

Setting List Price

- Markup Calculation:
    - Aim for a 35% markup on total cost to ensure profitability.

- Example:
    - Total cost = $10,
    - markup = $3.50.
    - Formula: markup = Total Cost * 0.35

Calculating MSRP

- Discount and MSRP:
  - Retail discount = 40%.

  - Formula for MSRP: Discounted Price / 0.6

- Columns:
  - Discounted Price = Total cost + markup.

  - MSRP: Adjusted for retailer discount.

Aggregated Statistics

- Key Metrics:
    - Total Expected Revenue: Based on demand and price.

    - Total Expected Cost: Includes all costs.

    - Total Profit: Difference between revenue and cost.

    - Average MSRP per Page: Useful for price estimation.

Exercise

- Goals:
  - Practice Excel formulas for mathematical operations.

  - Use shortcuts to streamline calculations.

  - Apply the IFS() function for conditional operations.

Exercise 1 – Calculating Costs

- Objective: Use IFS() function for printing costs based on paper type and ink.

- Details:
  - Printing Costs vary by paper weight (70 gsm vs. 80 gsm) and ink type (BW vs. Color).

  - Formula Example:
    - =IFS(C2="70 gsm", printing_costs!$B$2, Books!C2="80 gsm", printing_costs!$C$3) * B2
    - Note: Use $ to lock reference cells

Exercise 2 – Printing + Binding Cost

- Steps:
    - Create columns for Binding and Printing + Binding costs.

    - Apply IFS() formula for binding costs based on cover type (Paperback or Hardcover).

    - Add values to get the total cost of Printing + Binding.

    - Question: What is the Printing + Binding cost for "Programming in JavaScript"?

Exercise 3 – Total Cost, Publisher's Markup, and Discounted Price

- Objective: Calculate final costs and markup.

- Columns:
  - Total Cost = Author's royalties + Printing + Binding.

  - Publisher's Markup = Total Cost * 0.45.

  - Discounted Price = Total Cost + Publisher's Markup.

  - Formatting: Ensure 2 decimal places for accuracy.

  - Question: What is the Discounted Price for "The Art of Analysis"?

Exercise 4 – MSRP, Revenue, Costs, and Profits

- Objective: Determine profitability metrics.

- Columns:
  - MSRP = Discounted Price / 0.55 (Retailer discount of 45%).

  - Total Expected Revenue = Copies * Estimated Demand (%) * Discounted Price.

  - Total Expected Costs = Copies * Total Cost.

  - Expected Profits = Total Expected Revenue - Total Expected Costs.

  - Question: What are the total expected profits for the entire order?

Conclusions & Takeaways

- Skills Practiced:
  - SUM() function for aggregate values.

  - IFS() function for conditional calculations.

  - Efficient calculation methods and Excel shortcuts.

- Importance: Strengthen analytical skills with Excel functions and shortcuts for quick, accurate data analysis.

Basic Queries in Excel

- Goal: Efficiently query and summarize tennis player data using Excel.

- Key Excel Functions:
  - VLOOKUP(), HLOOKUP(), INDEX(), MATCH(), SUMPRODUCT(), SUMIF(), COUNTIF(), COUNTIFS()

Data Setup – Columns and Rows

- Data Structure:
  - Row and column-based format, with header rows to label data.

  - Sheets include "Matches," "Players," and "Counties" with player and match information.

Filtering Data

- Purpose: Filter data to locate relevant entries.

- Steps
  - Select the table.

  - Apply filters using "Sort & Filter" from the Home tab.

- Example: Filter players aged 30 in the Players worksheet.

Lookups – VLOOKUP & HLOOKUP

- VLOOKUP:
  - Finds values vertically based on a unique identifier.

  - Syntax: =VLOOKUP(lookup_value, table_array, col_index_num, [range_lookup])

- HLOOKUP:
  - Similar to VLOOKUP, but looks horizontally.

- Example: Use VLOOKUP to find the winner's name in the Matches sheet.

Advanced Lookup – INDEX() + MATCH()

- Purpose: A flexible method to locate data.

- INDEX + MATCH:
  - INDEX(range, row_num, col_num), MATCH(lookup_value, lookup_range, [match_type])

  - Allows looking up data in any column or row order.

- Example: Find the winner's ranking for each match.

Summarizing Data – Aggregation

- Function: SUMPRODUCT()
  - Useful for calculating weighted averages.

  - Syntax: =SUMPRODUCT(range1, range2)/SUM(range1)

- Example: Calculate the weighted average of serve points using match duration as the weight.

Conditional Functions

- AVERAGEIF:
  - Averages values that meet a specific condition.

  - Syntax: =AVERAGEIF(range, criteria, [average_range])

- Other Conditional Functions:
  - SUMIF(), COUNTIF(), COUNTIFS() – Useful for summing or counting based on conditions.

Advanced Conditional Functions

- COUNTIFS:
  - Allows up to 127 conditions.

  - Syntax: =COUNTIFS(criteria_range1, criteria1, criteria_range2, criteria2, ...)

- Example: Calculate matches lasting over 120 minutes with less than 60 serve points.

Conclusions & Takeaways

- Skills Practiced:
    - Filtering, lookups, advanced INDEX + MATCH, and conditional functions.

    - Aggregation functions for meaningful data analysis.

- Outcome: Ability to query and summarize data effectively in Excel for insightful reporting.

Exercise

- Goal: Analyze trends in renewable energy production using Excel.

- Focus Excel Functions:
  - AVERAGEIF()

  - SUMIF()

  - COUNTIFS()

Business Context

- Role: Analyst for an NGO focused on promoting renewable energy.

- Goal: Identify trends in renewable energy to recommend areas for investment.

- Data Provided: Excel file on energy production from 1990 to 2014 by country and sector.

Exercise 1 – Wind Power Production in 2014

- Objective: Calculate total wind power production for 2014.
- Formula:
  - =SUMIF(B:B, "2014", K:K)

- Question: How much more wind power was produced in 2014 compared to 2013?

Exercise 2 – Average Hydro Production in 2010

- Objective: Find the average hydro production for all countries/areas in 2010.

- Formula:
    - =AVERAGEIF(B:B, "2010", Column_Hydro)

- Question: What was the average hydro production in 2010?

Exercise 3 – High Production in Geothermal, Hydro, Solar, and Wind (2014)

- Objective: Count countries producing over 5,000 million kWh in all four sectors (geothermal, hydro, solar, wind) in 2014.

- Formula:
  - =COUNTIFS(B:B, "2014", Column_Geothermal, ">5000", Column_Hydro, ">5000", Column_Solar, ">5000", Column_Wind, ">5000")

- Question: How many countries met the criteria?

Conclusions & Takeaways

- Skills Practiced:
  - Using SUMIF(), AVERAGEIF(), and COUNTIFS() for quick analysis.

- Outcome: Efficiently calculated renewable energy statistics without sorting or filtering data.

- Next Steps: Continue practicing these functions to enhance Excel proficiency for large datasets.