MOBILE DASHBOARD

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Project Title: - **Comprehensive Analysis of Global Mobile Pricing and Specifications.**

Domain: - **"Data Analytics – Smartphone Market Analysis"**

Step 1

For column **Company Name** :-

used Formula ----> Trim to remove extra Space.

Step 2

For **column Model** :-

1st -> In the **Model** column, there is both text and numbers together
(for example, ModelName + StorageGB).
So, to separate them, you'll need to write a formula — because the model name and storage size (GB) are combined in one cell, you'll first need to clean or split that data.

Step 1 ---> **Extract Storage (GB)**

1. If the dataset is inconsistent, you can manually type the first storage value in the Storage column to confirm format (example: type 128GB in C2).

2. Create a new column (e.g., **Column D: Storage**).

3. Enter this formula in D2 and copy down:

=IFERROR(IF(FIND("GB",B2),B2,""),"")

What it does: checks if "GB" exists in the original cell (Column B). If yes, it returns the cell (the storage text); if not, it leaves the cell blank.

Extract Only Numeric Part from Storage :-

=VALUE(LEFT(D2, LEN(D2)-2))

What it does:

Removes the last two characters (GB) from the storage cell and converts the remaining number into a numeric value.

Step 2 — Extract Model Name (remove storage)

1. Create another column (e.g., **Column E: Model Name**).
2. Enter this formula in E2 and copy down:

=SUBSTITUTE(B2, D2, "")

Step 3

Wrap with **TRIM** to remove leftover spaces:

=TRIM(SUBSTITUTE(B2, D2, ""))

What it does: removes the storage text (from Column D) from the original text in Column B, leaving only the model name.

Formula :-

=IF(ISNUMBER(SEARCH("GB",B2)), VALUE(TRIM(LEFT(RIGHT(B2, LEN(B2) - FIND("@",SUBSTITUTE(B2," ","@",LEN(B2)-LEN(SUBSTITUTE(B2," ",""))))), FIND("G",RIGHT(B2, LEN(B2) - FIND("@",SUBSTITUTE(B2," ","@",LEN(B2)-LEN(SUBSTITUTE(B2," ",""))))))-1))), "")

Step 4: Final Layout Example

Original (B)	Storage (D)	Model Name (E)
iPhone 12 128GB	128GB	iPhone 12
Samsung S21 256GB	256GB	Samsung S21
OnePlus 9 128GB	128GB	OnePlus 9

Step 3

Create “Storage Range” Column

=IF([@Storage_GB]<=128,"Low (≤128GB)",IF([@Storage_GB]<=256,"Mid (129–256GB)","High (≥512GB)"))

Storage Value	Category
128GB or less	**Low (≤128GB)**
129GB–256GB	**Mid (129–256GB)**
512GB or more	**High (≥512GB)**

But in storage column there is a N/A value so we also want to treat them:-

Formula:-
=IF(OR([Storage_GB]="N/A",[Storage_GB]="",ISBLANK([Storage_GB])),"Unknown",IF([@Storage_GB]<=128,"Low (≤128GB)",IF([@Storage_GB]<=256,"Mid (129–256GB)","High (≥512GB)")))

Explanation

- OR([Storage_GB]="N/A",[Storage_GB]="",ISBLANK([Storage_GB]))
  → checks if the cell is text “N/A”, blank, or truly empty.
  → If true, it returns "Unknown".
- Otherwise, it classifies by numeric value:
  - ≤128 → Low
  - ≤256 → Mid
  - ≥512 → High

What to Fill in N/A Values:
• For phones where storage is not known, the correct business meaning is “Unknown” — because we can’t assume a range.

So the final column (Storage Range) will have 4 possible categories:
1 **Low (≤128GB)**
2 **Mid (129–256GB)**
3 **High (≥512GB)**
4 **Unknown** ← (for all “N/A” values)

Step 4

For Column Mobile Weight :-

Remove the letter **“G”** from the numeric values.

Step 5

For Column RAM :-

The RAM values include the unit “GB” — data needs to be standardized by removing the text and keeping only numeric values.

=LEFT(E7,LEN(E7)-2)

Step 6

From Column RAM ---- Create “RAM Range” Column:-

=IF([@RAM_GB]<=4,"Low (≤4GB)",IF([@RAM_GB]<=8,"Mid (5–8GB)","High (9GB+)"))

RAM Value	**Category**
4 GB or less	**Low (≤4GB)**
5 to 8 GB	**Mid (5–8GB)**
More than 8 GB	**High (9GB+)**

Step 7

FOR COLUMN FRONT CAMERA

You want to remove all text and keep only the numeric value (in megapixels)

e.g. ➞ 32, 8, 16, 12, 5, etc.

=IF(K2="","",VALUE(SUBSTITUTE(SUBSTITUTE(SUBSTITUTE(LEFT(K2,FIND("MP",K2)-1)," ",""),"Front",""),"Camera","")))

Function	Purpose
FIND("MP",K2)-1	Finds where "MP" ends and cuts everything before it
LEFT(K2, …)	Keeps only the part before "MP"
SUBSTITUTE(...," ","")	Removes extra spaces
VALUE(...)	Converts text number → actual numeric value
IF(...,"","")	Avoids errors for blank rows

=TRIM(K2)

Then convert the cleaned column to Number Format.

Step 8

FOR COLUMN BACK CAMERA

Separate every text and number using function .

=IFERROR(VALUE(LEFT(SUBSTITUTE(SUBSTITUTE(SUBSTITUTE(SUBSTITUTE(G16,"MP",""),"+"," "),"("," "),"Wide",""),FIND(" ",SUBSTITUTE(SUBSTITUTE(SUBSTITUTE(SUBSTITUTE(G16,"MP",""),"+"," "),"("," "),"Wide","")&" ")-1)),"")

What this does:

- Removes text like “MP”, “+”, “(”, “Wide”, etc.
- Finds the first space after the first number
- Converts that text into a numeric value

What To Do	Formula / Action
Remove text (“MP”, “Wide”, “+”)	Use SUBSTITUTE formula
Extract first numeric value	Use LEFT + FIND formula

What To Do	Formula / Action
Convert to numeric value	Wrap with VALUE function
Copy → Paste as Values	Make data permanent
Rename columns	Back_Camera_MP, Front_Camera_MP

STEP 9

FOR COLUMN BATTERY

Remove “mAh” ---> numeric

STEP 10

For column Screen Size :-

Remove “inches” -----> numeric

STEP 11

For column Country Pakistan:-

Separate text and numeric values using formula

=IFERROR(VALUE(SUBSTITUTE(SUBSTITUTE(SUBSTITUTE(column,"PKR",""),",",""),"$","")),"")

STEP 12

For column Country India:-

Separate text and numeric values using formula

=IFERROR(VALUE(SUBSTITUTE(SUBSTITUTE(K2,"INR",""),",","")),"")

STEP 13

For column Country China :-

In this column some double record while seeing the data with the help of filter . So I see the space with the help of length function and I remove them manually.

NOW I Separate text and numeric values using formula
=RIGHT(SUBSTITUTE(M2, ",", ""), LEN(SUBSTITUTE(M2, ",", "")) - 3)

NOTE :- Same AS all the column For all the countries.

STEP 14

NOW :- In my data set different types of country are there so I want to convert then into a global price.

Problem: Different Countries = Different Currencies.

Your dataset has price columns like:-

Country	Example	Currency
India	₹14,999	Indian Rupee (INR)
Pakistan	PKR 54,999	Pakistani Rupee (PKR)
China	¥ 1,299	Chinese Yuan (CNY)
Dubai	AED 1,599	UAE Dirham (AED)
USA	$ 399	US Dollar (USD)

All these are different currencies.

SO NOW,

Convert all prices to one base currency.

Usually convert everything to USD using approximate exchange rates , Because we need a one global price .

Currency	Conversion to USD (example)
INR	÷ 87.73
PKR	÷ 283.27
CNY	÷ 7.12
AED	÷ 3.67
USD	÷ 1

From this,

convert all countries into USD.

NOW ,

From this all we created I new column like India_USD, Pakistan_USD, China_USD, Dubai_USD.

STEP 15

Now from all of this I created a column of Average of USD values.

That gives you a meaningful **global Average price in USD.**

STEP 16

Now From this I created a column Price Variance .

It helps me to **measure how much the price of a phone model differs between countries.**

Price Variance shows how spread out the prices are across these countries for each model.

Price Variance = MAX(Country Prices) – MIN(Country Prices)

Formula:-

=MAX([@[Pakistan_USD]],[@[India_USD]],[@[China_USD]],[@[Launched Price (USA)]],[@[Dubai_USD]])-MIN([@[Pakistan_USD]],[@[India_USD]],[@[China_USD]],[@[Launched Price (USA)]],[@[Dubai_USD]])

STEP 17

Now from this I **Created Price Category Column.**

Once you have the average USD price, classify phones into price categories.

Category	Condition (based on USD price)
Budget	**< 200**
Mid-Range	**200–500**
Premium	**500–1000**
Ultra Premium	**> 1000**

Formula Example:

=IFS(T2<200,"Budget",

T2<= 500,"Mid Range",

T2<=1000,"Premium",

T2>1000," Ultra Premium")

(Where T2 is your Average Price USD column.)

STEP 18

NOW, Create Helper Columns for “Markup”

We’ll find how much **higher/lower** each country’s price is compared to the **Global Average**.

Added 5 new columns

India_Markup , Pakistan_Markup , China_Markup , Dubai_Markup , USA_Markup

1. **India_Markup:**

=IF(OR([@[India_USD]]="",[@[Average Global Price (USD)]]=""),"",[@[India_USD]]-[@[Average Global Price (USD)]])

2. **Pakistan_Markup:**

=IF(OR([@[Pakistan_USD]]="",[@[Average Global Price (USD)]]=""),"",[@[Pakistan_USD]]-[@[Average Global Price (USD)]])

3. **China_Markup**:
=IF(OR([@[China_USD]]="",[@[Average Global Price (USD)]]=""),"",[@[China_USD]]-[@[Average Global Price (USD)]])

4**. Dubai_Markup**:

=IF(OR([@[Dubai_USD]]="",[@[Average Global Price (USD)]]=""),"",[@[Dubai_USD]]-[@[Average Global Price (USD)]])

5. **USA_Markup**:

=IF(OR([@[USA_USD]]="",[@[Average Global Price (USD)]]=""),"",[@[USA_USD]]-[@[Average Global Price (USD)]])

NOTE: These formulas give you the difference (positive = more expensive, negative = cheaper).

FROM this you can calculated AVERAGE Markup (USD) price.
1 Go to a new sheet (name it **Country_Markup_Summary**).
then I created a small table like this :-

Country	**Avg Markup (USD)**
India	
Pakistan	
China	
Dubai	
USA	

Formula :-
India =AVERAGE(Table1[India_Markup])
Pakistan =AVERAGE(Table1[Pakistan_Markup])
China =AVERAGE(Table1[China_Markup])
Dubai =AVERAGE(Table1[Dubai_Markup])
USA =AVERAGE(Table1[USA_Markup])

Now your table shows the average price difference (markup or discount) for each country.

STEP 19

For Column :- Spec_Score

Step 1: Check what spec columns you have

RAM_GB , Storage_GB , Battery_mAh , Main_Camera_MP , Processor (text type)

Each spec is measured differently — e.g. battery in mAh, RAM in GB.
We can standardize roughly by dividing large numbers.

=IF(OR([@RAM_GB]="N/A",[@Storage_GB]="N/A",[@Battery_mAh]="N/A",[@Main_Camera_MP]="N/A"),"Unknown",
ROUND(([@RAM_GB] + ([@Storage_GB]/128) + ([@Battery_mAh]/1000) + ([@Main_Camera_MP]/50)),2))

OR

=IF(OR(F2="N/A",C2="N/A",K2="N/A",I2="N/A"),"Unknown",
ROUND((F2 + (C2/128) + (K2/1000) + (I2/50)),2))

🧠 **Explanation:**
RAM → direct contribution
Storage → divided by 128 so it scales down
Battery → divided by 1000 so 5000mAh = 5
Camera → divided by 50 so 50MP = 1, 100MP = 2
Processor → can't be numeric, so we'll handle it separately

Why do we divide by 128?
• Storage (GB) values typically range from 64GB to 512GB.
• If you add the storage value directly, it will be too large and dominate over other features like RAM, camera, and battery.
• Therefore, to normalize (scale) the value, it is divided by 128 so that it falls roughly within the range of 1–4.

STEP 20

For Column Spec_Range

Step 1: Understand Your Range :-
Lowest Spec_Score: ~3.39
Highest Spec_Score: ~32.55
So, the total range ≈ 29 points.

Step 2: Divide into Three Categories :-

If your Spec_Score column has **numbers** (Unknown = 0):

```
=IF([@Spec_Score]=0,"Data Missing",
IF([@Spec_Score]<=12,"Low-End",
IF([@Spec_Score]<=22,"Mid-Range",
"High-End")))
```

OR

If your Spec_Score column has **text ("Unknown")**:

```
=IF(OR([@Spec_Score]="Unknown",[@Spec_Score]=""),"Data Missing",
IF([@Spec_Score]<=12,"Low-End",
IF([@Spec_Score]<=22,"Mid-Range",
"High-End")))
```

why Unknown or 0 ?

Because in Storage column there is a null value so we cant assume by ourself .

Step 3: Result Example

Spec_Score	Spec_Range
5.8	Low-End
14.9	Mid-Range
25.6	High-End
Unknown	Data Missing

STEP 21

For column Rating :-

```
=IF(OR(AD2=0,AD2="Unknown"),0,
IF(AD2<=12,3,
IF(AD2<=20,4,4.7)))
```

MEANS

If AD2 is 0 or "Unknown" → return 0.

If AD2 is 12 or less → return 3.

If AD2 is more than 12 but 20 or less → return 4.

If AD2 is more than 20 → return 4.7.

STEP 22

For column Rating_Range :-

=IF([@Rating]=0,"Unknown",
IF([@Rating]<=3.0,"Budget",
IF([@Rating]<=4.0,"Mid-Range","Premium")))

Rating	Rating_Range	Meaning
0	Unknown	No rating / missing specs
3.0	Budget	Entry-level models
4.0	Mid-Range	Balanced phones
4.7	Premium	High-end / flagship

STEP 23

For column Value Score :-

=IF(OR(AE2="Unknown",AE2=0),"", **AE2/V2**)

You will get the value score form this.

----------END----------