

Crunchy Corner

Business Optimization & Budgeting

About Company : Crunchy Corner is one of India largest Fast Foods restaurant chain and serving millions of customers daily across various cities in India with more than 1000 restaurant and have largest SKU in the industry

Client Requirement: Looking for Dashboard where we can check our Financial Performance, how we can Optimize our Business and Budgeting .

- a. Financial Overview Metrics
- b. Optimization of Business
- c. Financial Planning & Budgeting

Module: 1 : Understand the Business:

About Company : Crunchy Corner is one of India largest Fast Foods restaurant chain and serving millions of customers daily across various cities in India with more than 1000 restaurant and have largest SKU in the industry

- Understand the data and dividing into Dimension and Facts Table
- Data Modelling : Relationship Development for Insight
- Data Analysis and Dashboard

Tool Use : Excel and Power BI Desktop

For Analysis and matrix : DAX

Data Cleaning: Power Query and Excel .

1.1 Tables Details

- ✓ *Fact Table (Actual/Budget) stores the core transactional data.*

Table: Actual & Budget Column Detail's

- C1. **Product_Id:** Unique identifier for each product.
- C2. **Date_Id:** Unique identifier for the date.
- C3. **Cluster Head:** Person or group overseeing the sales or operations in a region.
- C4. **Channel_Id:** Sales or distribution method (e.g., retail, online).
- C5. **Location_Id:** Physical or market location of sales.
- C6. **Volume Mt:** Quantity sold in metric tons.
- C7. **Gross Sales:** Total sales before deductions like discounts.
- C8. **Discount:** Price reductions offered on sales.
- C9. **Trade Spend:** Amount spent on promotions and marketing through trade channels.
- C1. **Total T & Disc:** Total of trade spend and discounts. *[Trade Spend + Discount]*
- C2. **Net Revenue:** Revenue after discounts and trade spend.
- C3. **Raw Material:** Cost of raw materials used in production.
- C4. **Packaging Material:** Cost of packaging materials.
- C5. **Industrial Fixed Cost:** Fixed manufacturing costs (e.g., salaries, equipment).
- C6. **Industrial Variable Cost:** Variable manufacturing costs (e.g., materials, utilities).
- C7. **Total Fixed & Variable Cost:** Total of fixed and variable manufacturing costs. *[Industrial Fixed Cost + Industrial Variable Cost]*

- C8. COGS:** Cost of goods sold (total cost to produce goods). [*Raw Material + Packaging Material + Total Fixed & Variable Cost*]
- C9. Gross Profit:** Revenue minus Cogs. [*Net Revenue – COGS*]
- C10. GP%:** Gross profit as a percentage of sales. [*(Gross Profit / Gross Sales)*100*]
- C11. Marketing:** Expenses for advertising and marketing.
- C12. S&D:** Sales and distribution expenses.
- C13. G&A:** General and administrative costs.
- C14. Other Inc & Exp:** Other income and expenses.
- C15. EBITDA:** Earnings before interest, taxes, depreciation, and amortization. [*Gross Profit - Marketing S&D - G&A - Other Inc & Exp*]
- C16. Depreciation:** Reduction in value of assets over time.
- C17. One Off Item:** Unusual or one-time expenses.
- C18. Tax:** Taxes on income.
- C19. Interest Income:** Income from interest on investments.
- C20. Interest Exp:** Interest expenses on loans.
- C21. Net Profit:** Final profit after all expenses, taxes, and interest. [*EBITDA - Depreciation - OneOff Item - Tax + Interest Income - InterestExp*]

✓ *Dimension Tables (Dim_product, Dim_date, Dim_location, Dim_Channel, Dim_Clusterhead,) provide additional context for analysis.*

Table: DimDate Column Detail's

- C1. Date_Id:** A unique identifier for the date.
- C2. Year:** The year of the transaction or event.
- C3. Quarter:** The quarter of the year (Q1, Q2, Q3, Q4).
- C4. Month:** The name of the month.
- C5. Month_No:** The number of the month (1 for January 2 for February, etc.).
- C6. Month End_Date:** The last day of the month.

Table: DimProduct Column Detail's

- C1. Product_Id:** A unique identifier for products.
- C2. SKU Code:** A specific identifier for a product within inventory management.
- C3. SKU Description:** A description of the product.
- C4. Category:** The broad group or type of product (e.g., electronics, clothing).
- C5. Sub Category:** A narrower group within the category.
- C6. Product:** The specific name or model of the product.
- C7. Sub Product:** A variation or subtype of the product.

Table: DimClusterhead Column Detail's

- C1. Cluster_Id:** A unique identifier for a sales or operations cluster.
- C2. Cluster Head:** The person in charge of a cluster.

Table: DimLocation Column Detail's

- C1. Location_Id:** A unique identifier for each location.
- C2. Location:** The name or description of the physical or market location.

Table: DimChannel Column Detail's

C1. Channel_Id: A unique identifier for sales or distribution channels.

C2. Channel: The method or pathway through which products are sold (e.g., online, wholesale).

1.2 Power BI Relationship: To create DAX formulas, establish a relationship between the columns in the Actual table (Fact table) and the Dimension tables

1.2.1 One-to-Many: One-to-many relationship in DAX links dimension tables (unique values) to fact tables (repeated values), enabling efficient filtering and aggregation across tables. It ensures accurate analysis, with DAX functions like CALCULATE and RELATEDTABLE leveraging these relationships for data calculation and reporting in Power BI.

- a. Actual[Product_Id] to Dimproduct[Product_Id] | *For Product Information*
- b. Actual[Date_Id] to Dimdate[Date_Id] | *For Date Information*
- c. Actual[Cluster Head] to Dimclusterhead[Cluster Head] | *For Cluster Head Information*
- d. Actual[Channel] to Dimchannel[Channel] | *For Channel Information*
- e. Actual[Location] to Dimlocation[Location] | *For Location Information*

1.3 Dax Farmula for Calculating Matrix

- **Aggregation Functions**

SUM, AVERAGE, COUNT, COUNTA, MIN, MAX

- **Time Intelligence Functions**

TOTALYTD, PREVIOUSYEAR, DATEADD, SAMEPERIODLASTYEAR , PREVIOUSMONTH

- **Logical and Conditional Functions**

IF, IFERROR, ISBLANK, SWITCH

- **Mathematical Functions**

DIVIDE, MULTIPLICATION

- **Filter Functions**

CALCULATE, FILTER, ALL, ALLSELECTED, SELECTEDVALUE, VALUES

- **Text Functions**

CONCATENATE, FORMAT

- **Ranking and Comparison Functions**

RANKX, TOPN

Module: 2 Financial Performance

- a. Overall: Sales, Gross Profit, EBITDA, PAT, SKU
- b. Show YoY Change for Following (Sales, Gross Profit, EBITDA, PAT)
- c. Trend of Sales with PAT with PAT%
- d. Show 100% stake Column Chart showing (Sales, Gross Profit, EBITDA, PAT)
- e. Show Sales by Category & Location
- f. Sales Bifurcation by Channel
- g. Volume & Trend by Category

Module: 3 Optimization of Business

- a. **Top Category by Gross Profit & Net Revenue (Scatter Plot)**
- b. **Gross Profit & Volume Comparison with Average (Dynamic)**
- c. **Pareto Analysis (Level 1,2,3)**
- d. **Show highest sales by category and % of SKU Contribution bar line chart**

Optimization Steps

Created Formula for every Problem statement defined by the client in order to Complete the Project

- a. **Quadrant Analysis:** *Quadrant Analysis to Identify category, Sub Category high Contribution by sales & Gross Profit*
Quadrant Analysis to Identify Location high Contribution by sales & Gross Profit
- b. **GP Comparison :** *Gross Profit & Volume Comparison for Category.*
- c. **Pareto Principle (80/20 Rule):** A principle that suggests that a small percentage of product (20%) are responsible for a large percentage of outcomes (80%)
 - a. **Level:1-** *Ascending order (Total Sales / Ranking of SKU By Sales/ Cumulative Sales/ Calculate Total SKU Sales/ Cumulative % = Cum/Total SKU sales/ SKU Count/ Cumulative sku Count/ Net SKU Count/ Cum SKU %*
 - b. **Level:2-** *Descending order (Des SKU NR)*
 - c. **Level:3-** *Pareto Base/ Pareto % Top N revenue*

Show Sales & % SKU

Calculate: *Total Sales / %SKU Over Total SKU*

Module: 4 Budgeting Analysis

- a. PVM Analysis
- b. Variance Analysis(Actual /Variance)
- c. Actual Vs Budget Financial Analysis for Business Drivers (Sales, EBITDA, PAT, Volume) with Trend YoY
- d. Actual Vs Budget Financial Analysis for Cost Drivers (COGS, Packaging, Marketing) with Trend YoY

PVM Analysis (Price, Volume, Mix)

PVM Analysis is a technique used to analyse the changes in a company's revenue by breaking down the contributing factors into three main components:

1. **Price:** The impact of changes in the price of products or services sold.
2. **Volume:** The effect of changes in the quantity of products or services sold.
3. **Mix:** The impact caused by selling different types or categories of products with varying profit margins (high-margin vs. low-margin products).

The goal of PVM analysis is to understand how much each factor (Price, Volume, Mix) contributes to changes in revenue or profit, which helps businesses make better decisions around pricing strategies, sales efforts, and product portfolio management

- *PVM Analysis helps to understand the factors affected the business to Increase or Decrease*

Formula for Actual vs. Budget PVM Analysis

1. **Price Impact:** This shows the effect of the difference in the prices between actual and budgeted values, assuming the volume stayed constant.

$$\text{Price} = (\{\text{Actual Price}\} - \{\text{Budgeted Price}\}) * \{\text{Actual Volume}\}$$

- *Change in revenue due to price deviations from the budget.*

2. **Volume Impact:** This shows how changes in sales volume (actual vs. budget) impacted revenue, assuming the price remained the same.

$$\text{Volume} = (\{\text{Actual Volume}\} - \{\text{Budgeted Volume}\}) * \{\text{Budgeted Price}\}$$

- *Revenue difference caused by selling more or fewer units than planned.*

3. **Mix Impact:** This shows how changes in the mix of products sold (high-margin vs. low-margin) affect revenue, assuming no price or volume change. This focuses on the composition of what was sold compared to what was budgeted.

$$\text{Mix} = (\{\text{Actual Volume}\} * (\{\text{Actual Price}\} - \{\text{Budgeted Price}\}))$$

- *The impact of changes in the mix of products or services sold compared to the budgeted plan.*

Key Takeaways:

- **Price Impact** tells you how much revenue change is due to charging a higher or lower price than budgeted.
- **Volume Impact** explains the effect of selling more or fewer units compared to the plan.
- **Mix Impact** shows the revenue difference due to changes in the mix of products sold (e.g., selling more high-margin items).

Why Use Actual vs. Budget in PVM Analysis?

Assess performance vs. expectations: It breaks down how well you performed compared to the budget and why those differences occurred.

Identify missed opportunities: Understand if deviations were due to under/overpricing, lower/higher sales volume, or changes in the mix of products sold.

Improve future planning: Use insights to refine pricing strategies, set more realistic sales volume targets, or adjust the product mix in future budgeting.

Variance (Actual vs Budget) with M3 Advanced Condition.

This analysis evaluates business performance by into three keys (M3): “**More,**” “**Meet,**” and “**Misses.**” These outputs are based on the year-over-year (YOY) net revenue growth percentage (NR Var. %) and the gross profit variance (GP Var. %). The final output is converted into numeric values (1, 2, or 3) for easier monitoring and reporting.

Key Variables:

1. **NR Var. Parameter:** Represents a percentage parameter
2. **GP Var. Parameter:** Represents a percentage parameter
3. **C:** A scaling factor for the gross profit variance.

The formula categorizes the results into three groups and assigns them a numeric value:

1. **More (1):** Indicates high revenue growth and positive gross profit variance.
2. **Meet (2):** Represents stable or moderate growth with acceptable gross profit.
3. **Misses (3):** Reflects negative revenue growth and/or gross profit losses.

Purpose of the Formula:

Performance Tracking: Helps track whether business performance in terms of net revenue growth and gross profit variance is exceeding expectations, meeting expectations, or missing targets.

Monitoring: The numeric output (1, 2, 3) allows for simple monitoring of trends, facilitating visualization and further analysis.

DAX : Variance (Actual vs Budget) with M3 Advanced Condition.

GP Var. Adjustments = `GENERATESERIES(-50, 50, 0.5)`

NR Var. Adjustment = `GENERATESERIES(-50, 50, 0.5)`

M3 Advanced Condition =

```
VAR B = 'NR Var. Adjustment'[NR Adjustment Value]
VAR C = 'GP Var. Adjustments'[GP Adjustments Value]
Var A = if(
    [B/A]>B*0.01,
    if([B_GP Var %]>0,"More",if([B_GP Var %]<-C*0.01,"Misses","Meet")),
    if([B/A]<-B*0.01,
    if([B_GP Var %]>0,"Meet","Misses"),
    if([B_GP Var %]>-C*0.01,"Meet","Misses")))

Return SWITCH(A,
    "More",1,
    "Meet",2,
    "Misses",3)
```

DAX: PVM Analysis

Create Table: PVM Analysis =

```
DATATABLE(
    "ID", INTEGER,
    "Factor", STRING,
    {
        {1, "Actual NR"},
        {2, "Vol"},
        {3, "Price"},
        {4, "Mix"},
        {5, "Budget NR"}
    }
)
```

Create Measure: for created Column of table

```
PVM Values = SWITCH(MAX('PVM Analysis'[id]),
    1,[A_NR],
    2, [PVM Vol]
    ,3,[PVM Price],
    4,[PVM MIX],
    5,[BNR]
)
```

Diagram: Waterfall Chart for comparison

DAX: Pareto (80/20) Analysis

Rank =

`RANKX(ALL(Dim_Product[SKU Description]),[A_NR],,DESC)`

Cumulative SKU NR Total =

`SUMX(TOPN([Rank],ALL(Dim_Product[SKU Description]),[A_NR],DESC),[A_NR])`

Total SKU NR =

`SUMX(ALL(Dim_Product[SKU Description]),[A_NR])`

Cumulative SKU NR Total % =

`DIVIDE([20/80 CuM NR],[20/80 Total SKU NR],0)`

- Same DAX calculation use for Cumulative SKU %

Pareto Base/ Pareto % Top N revenue :

Created Parameter Base Value = `SELECTEDVALUE('Value'[1Parameter], 10000)`

Pareto Top NR =

```
VAR =If([SKU]>=SELECTEDVALUE('Value'[1Parameter]),
sumx(TOPN(SELECTEDVALUE('Value'[1Parameter]),ALLSELECTED(Dim_Product[SKU
Description]),[A_NR]),[A_NR]),BLANK())

RETURN
A
```

Pareto % Top NR =

`VAR A = ([Pareto Top NR]/[A_NR])`

```
return
if(A>1,1,A)
```

For Previous YTD NR =

`TOTALYTD([A_NR],
SAMEPERIODLASTYEAR(Dim_Date[Month End_Date]),ALL(Dim_Date))`

YOY YTD = `DIVIDE(([CYTD NR]-[PYTD NR]),[PYTD NR])`

Same period last Year = `CALCULATE([A_NR],`

`SAMEPERIODLASTYEAR(Dim_Date[Month End_Date]),ALL(Dim_Date))`

Non-Operating Expenses =

```
VAR _DC = SUM(Actual[Depreciation])*-1
VAR _offitem = SUM(Actual[One Off Item])*-1
VAR _Tax = SUM(Actual[Tax])*-1
VAR _IE = SUM(Actual[Interest Exp])*-1
VAR _II = Sum(Actual[Interest Income])
RETURN
_DC+_offitem+_Tax+_IE-_II
```

Operating Expenses = `[RM]+[F&V]+[Packing]+[S&D]+[G&A.]+[Marketing]+SUM(Actual[Other Inc & Exp])*-1`

Operating Profit = `[A_GP]-[Operating Expenses]`

OpProfitmargin = DIVIDE([Operating Profit],[A_NR],0)

DAX: Created for custom Visualization and KPI Cards and Filter

Channel label for bar chart =

```
VAR _item = SELECTEDVALUE(Dim_Channel[Channel])
VAR _Val = FORMAT([A_NR], "#,##,.,0")
VAR _PV = FORMAT([PY NR], "#,##,.,0")
VAR _YOY = FORMAT([YoYGrowth], "0.00%")
VAR _Lable = _item & "|" & _Val //& "|" & "PY: " & _PV & "|" & _YOY//

RETURN

_Lable
```

label for bar chart =

```
VAR _item = SELECTEDVALUE(Dim_Product[Category])
VAR _Val = FORMAT([A_NR], "#,##,.,0")
VAR _PV = FORMAT([PY NR], "#,##,.,0")
VAR _YOY = FORMAT([YoYGrowth], "0.00%")
VAR _Lable = _item & "|" & _Val //& "|" & "PY: " & _PV & "|" & _YOY//

RETURN

_Lable
```

DataBar =

```
VAR NrIcons = 9
VAR PctoffBudget = DIVIDE([A_NR],[BNR])
VAR NrIcons_fil = PctoffBudget*NrIcons
var nriconsfilled = IF(NrIcons_fil<0,0,INT(NrIcons_fil))
VAR NrIcons_Empty = NrIcons-nriconsfilled

VAR Iconfill= "●"
VAR Iconemty = "●"

VAR _DataBar =
REPT( Iconfill,NrIcons_fil)&
REPT( Iconemty, NrIcons_Empty)

RETURN
_DataBar
```