PROBLEMS STATEMENT

01 **Finding the cause behind unsastisfactory profit collection.**

The electronic store are planning to reorganize their business strategy

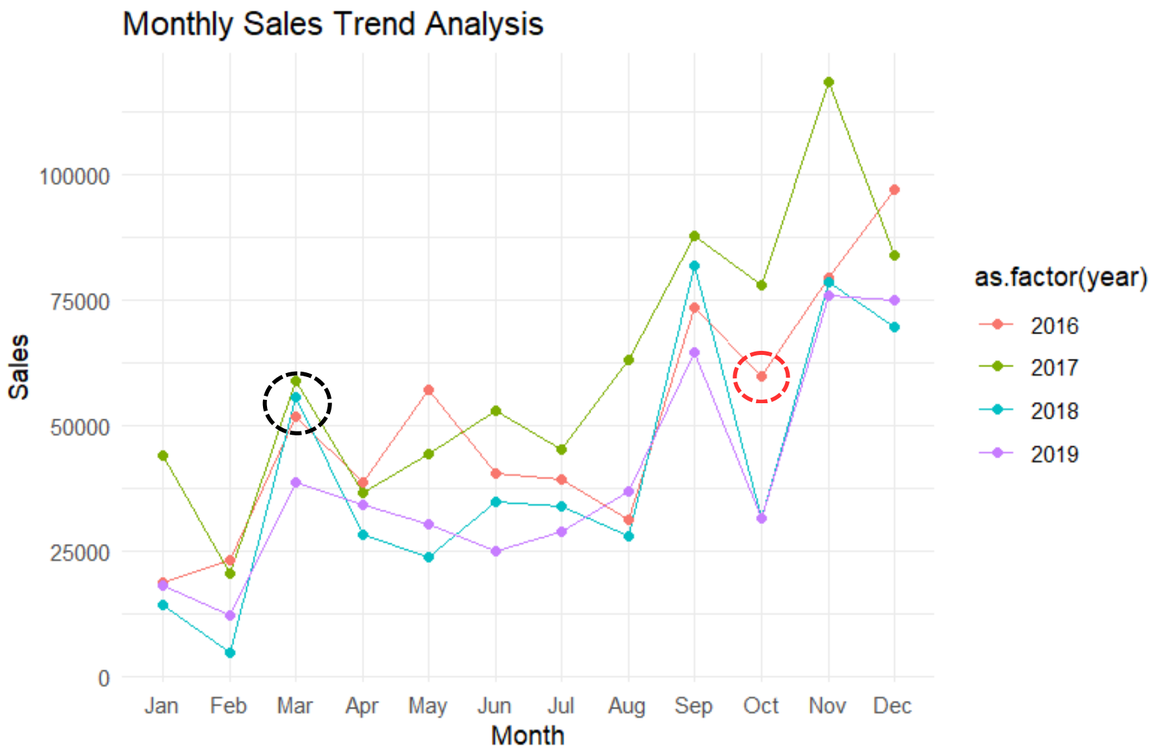
OBJECTIVE

01 **To visualize the total profit & sales**

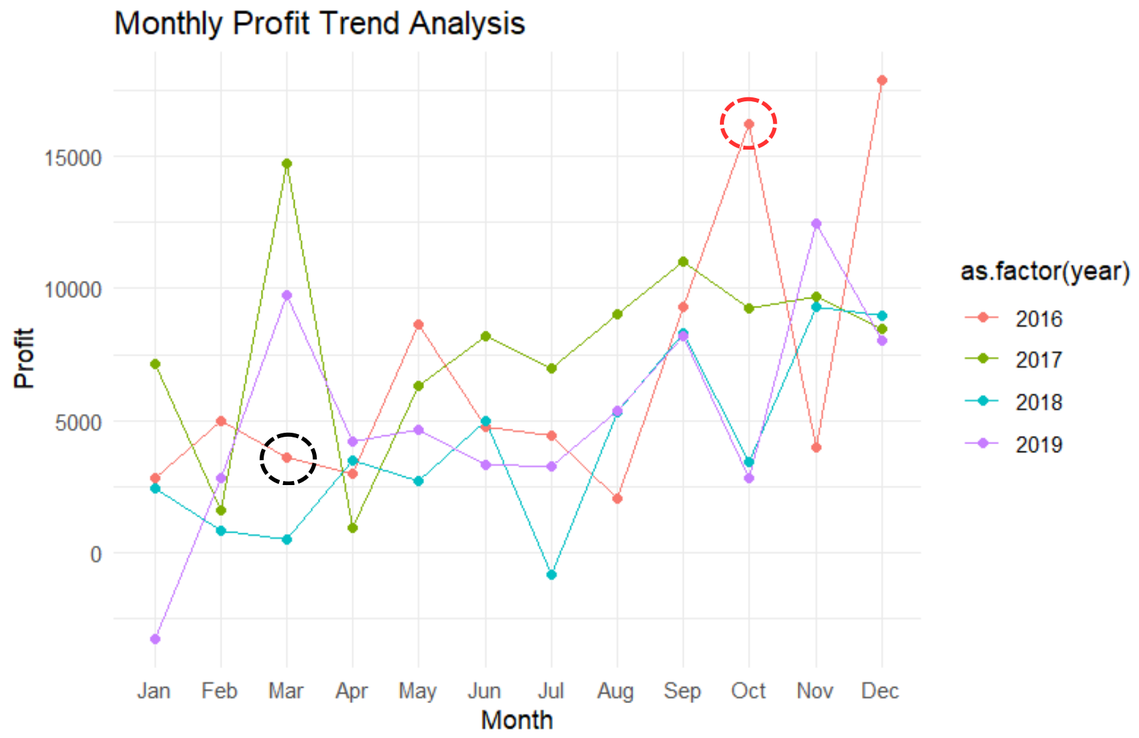
01 **To discover the relationship between products using Market Basket Analysis**

DATA EXPLORATARY

DATASET 02



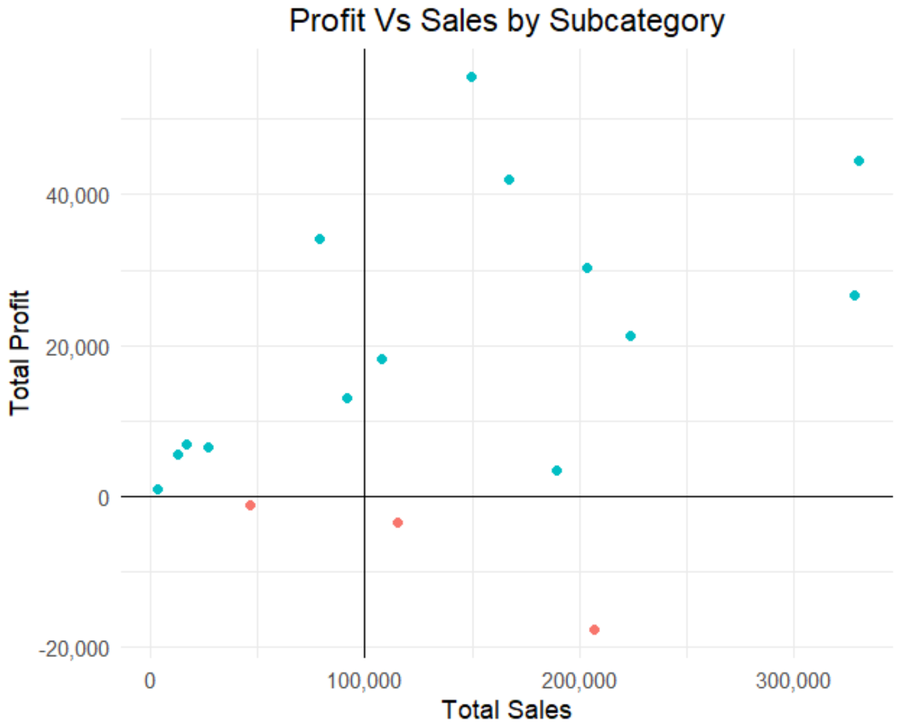
Monthly Sales Trend Analysis



Monthly Profit Trend Analysis

DIAGNOSE THE PROBLEM

DATASET 02



Scatterplot for correlation

```
> # Print correlation coefficients
> print(sorted_correlation)
     Profit       Sales    Quantity       RowID    Discount
1.00000000  0.47906435  0.06625319  0.01249721 -0.21948746
```

Correlation coefficient

HYPOTHESIS TEST

HO **The discount does not have any effect on the profit**

HA **The discount does have any effect on the profit**

```
> # Perform the Z-test using the function
> z_test_result <- z.test(profit_sample_disc, df$Profit)
> print(z_test_result)
     Z_calc      P_value
1 -6.227954 2.362833e-10
```

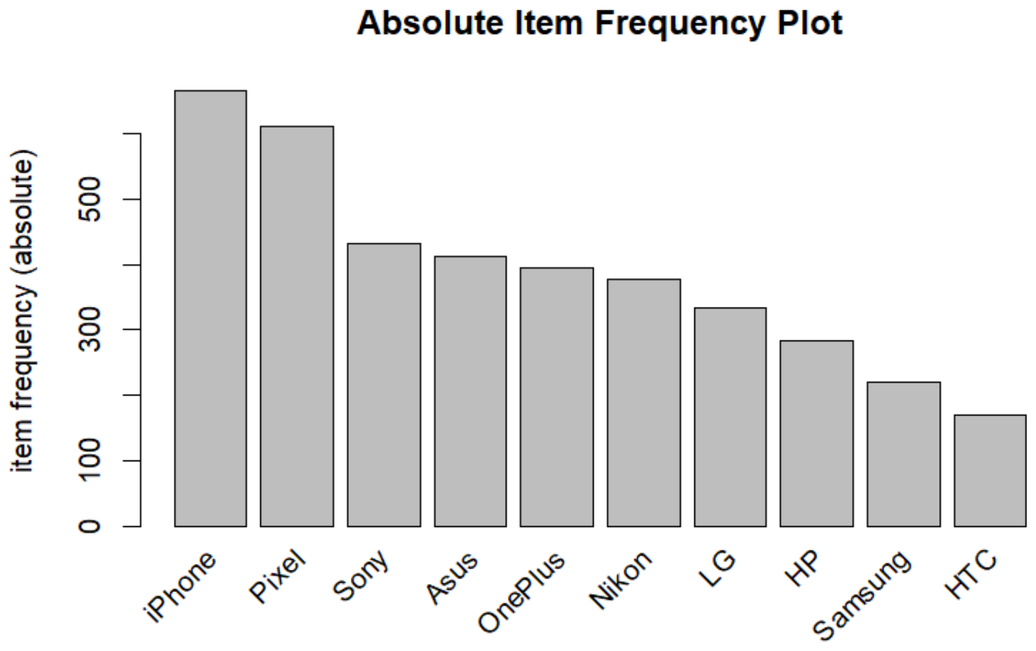
Z-test

MODEL PLANNING

DATASET 02

Market Basket Analysis

> Apriori algorithm
> Unsupervised learning
> Finding association between items in store
> Rules as result



Most frequent bought items

MBA FINDINGS

DATASET 02

```
> inspect(scenario1)
      lhs           rhs      support    confidence coverage   lift     count
[1]   {Samsung}  => {Pixel}  0.01137725 0.2590909  0.04391218 2.124461  57
[2]   {Samsung}  => {iPhone} 0.01077844 0.2454545  0.04391218 1.846437  54
[3]   {HP}       => {Pixel}  0.01317365 0.2332155  0.05648703 1.912291  66
[4]   {LG}       => {iPhone} 0.01696607 0.2544910  0.06666667 1.914414  85
[5]   {OnePlus}  => {Pixel}  0.01976048 0.2512690  0.07864271 2.060324  99
[6]   {OnePlus}  => {iPhone} 0.02195609 0.2791878  0.07864271 2.100197 110
[7]   {Asus}     => {iPhone} 0.02155689 0.2615012  0.08243513 1.967149 108
[8]   {Sony}     => {iPhone} 0.02135729 0.2471132  0.08642715 1.858914 107
[9]   {Pixel}    => {iPhone} 0.02934132 0.2405892  0.12195609 1.809838 147
[10]  {iPhone}   => {Pixel}  0.02934132 0.2207207  0.13293413 1.809838 147
```

one item bought together

Support = 0.01, Confidence = 0.22, minlen =2

MBA FINDINGS

DATASET 02

```
> inspect(scenario2)
    lhs                    rhs        support     confidence coverage   lift     count
[1] {OnePlus, Pixel}   => {iPhone}   0.006387226 0.3232323  0.01976048 2.431522 32
[2] {iPhone, OnePlus}  => {Pixel}    0.006387226 0.2909091  0.02195609 2.385359 32
[3] {iPhone, Pixel}    => {OnePlus}  0.006387226 0.2176871  0.02934132 2.768051 32
[4] {Asus, Pixel}      => {iPhone}   0.006786427 0.3820225  0.01776447 2.873773 34
[5] {Asus, iPhone}     => {Pixel}    0.006786427 0.3148148  0.02155689 2.581378 34
[6] {iPhone, Pixel}    => {Asus}     0.006786427 0.2312925  0.02934132 2.805752 34
[7] {Pixel, Sony}      => {iPhone}   0.006387226 0.3764706  0.01696607 2.832008 32
[8] {iPhone, Sony}     => {Pixel}    0.006387226 0.2990654  0.02135729 2.452239 32
[9] {iPhone, Pixel}    => {Sony}     0.006387226 0.2176871  0.02934132 2.518735 32
```

two items bought together

Support = 0.006, Confidence = 0.1, minlen =3

MBA FINDINGS

DATASET 02

```
> inspect(scenario3)
    lhs                              rhs        support     confidence coverage    lift     count
[1] {Nikon, OnePlus, Pixel}   => {iPhone}   0.002195609 0.5789474  0.003792415 4.355145 11
[2] {iPhone, Nikon, OnePlus} => {Pixel}    0.002195609 0.5238095  0.004191617 4.295067 11
[3] {iPhone, Nikon, Pixel}    => {OnePlus} 0.002195609 0.5238095  0.004191617 6.660624 11
[4] {iPhone, OnePlus, Pixel} => {Nikon}    0.002195609 0.3437500  0.006387226 4.568137 11
[5] {OnePlus, Pixel, Sony}    => {iPhone}  0.002195609 0.5000000  0.004391218 3.761261 11
[6] {iPhone, OnePlus, Sony}   => {Pixel}   0.002195609 0.4230769  0.005189621 3.469092 11
[7] {iPhone, OnePlus, Pixel} => {Sony}     0.002195609 0.3437500  0.006387226 3.977338 11
[8] {iPhone, Pixel, Sony}     => {OnePlus} 0.002195609 0.3437500  0.006387226 4.371034 11
```

three items bought together

Support = 0.002, Confidence = 0.3, minlen =4

FINDINGS INTERPRETATION

DATASET 02

01 Top items (brand)

iPhone, OnePlus

02 Notable rules

> [1] {samsung} => {pixel}
> [7] {pixel, sony} => {iPhone}
> [2] {iPhone, nikon, oneplus} => {pixel}

03 Business Strategy

> Marketing, product placement
> Product Bundling
> Inventory management
> Customer satisfaction