| Name | Roll No |
|------|---------|
| ➢ Imteyaz | 21 |
| ➢ Nasira | 22 |
| ➢ Navin | 23 |
| ➢ Nilesh | 24 |
| ➢ Onkar | 26 |
| ➢ Prathmesh | 28 |
| ➢ Rhishikesh | 29 |
| ➢ Rohit | 30 |

# DMAIC METHODOLOGY

‣ **DMAIC is the Six Sigma methodology to conduct overall analysis of process problem and sustain the whole process.**

‣ **Define**

‣ **Measure**

‣ **Analyze**

‣ **Improve**

‣ **Control**

# DECLINE OF SAMSUNG SHARE IN THE SMARTPHONE MARKET DMAIC RESOLUTION

# INTRODUCTION

In India one of the fastest growing market mobile market in the world, having more than 400+ million mobile subscribers. Samsung electronics who was found in 1938 and at present work in subsidiaries like Electronics, Machinery, chemical industries, Retail services , Financial services,Enertainment and others.

Samsung electronics is the world largest brand by revenues in 2017 but it falls down by 3 billion dollar in 2018.

Samsung started their operation in handset market in 1988 and become world second largest mobile handset master but at present the market od samsung smartphone falls down .
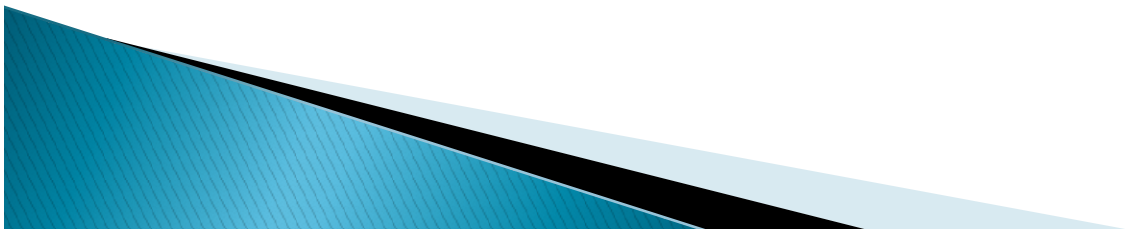
# Project Charter

### ▸ Problem Statement

▸ According to Gartner, Samsung's Smartphone sales dropped 14% from 85.6 million units in Q4 2017 to 73.3 million units in Q4 this year . As a result, the company's market share also took a dive from 22.3% to 18.9% during the same period. Gartner mentions weak demand for Samsung  smart phones across categories, including the premium segment populated by the critically acclaimed Galaxy S9/S9+,Note 9 and others.

### ▸ Goal Statement

▸ Samsung would strengthen product competitiveness by differentiating core features and services.

▸ Create the products and services that give customers the best satisfaction.

▸ Retain the 1st position in the world in the same line of business.

India Premium Smartphone Segment Market Share – Q4 2018

# VOC Translation Matrix

Voice of the customer translation matrix

| Customer comment (What are they saying?) | Gathering More Understanding (Why are they saying it?) | Customer Requirement (What do they want?) |
|---|---|---|
| I want better and optmized features in my smartphone mobile | No satisfied with comment feature of samsung smartphone | Samsung smartphone with optimized features. |
| I want a long lasting battery and better quality of battery. | Battery backup and burning issue regrading battery. | Samsung smartphone with good battery backup with better quality. |
| I want samsung smartphone at affordable cost. | Price of samsung smartphone is much more high. | Samsung smartphone with affordable cost which is suitable to our pocket. |
| Better serivice at affordable  cost. | Cost of services is not suitable for our pocket. | Samsung smartphone with better services at cost which is suitable to our pocket. |

# Gantt Chart: Improvement  Project
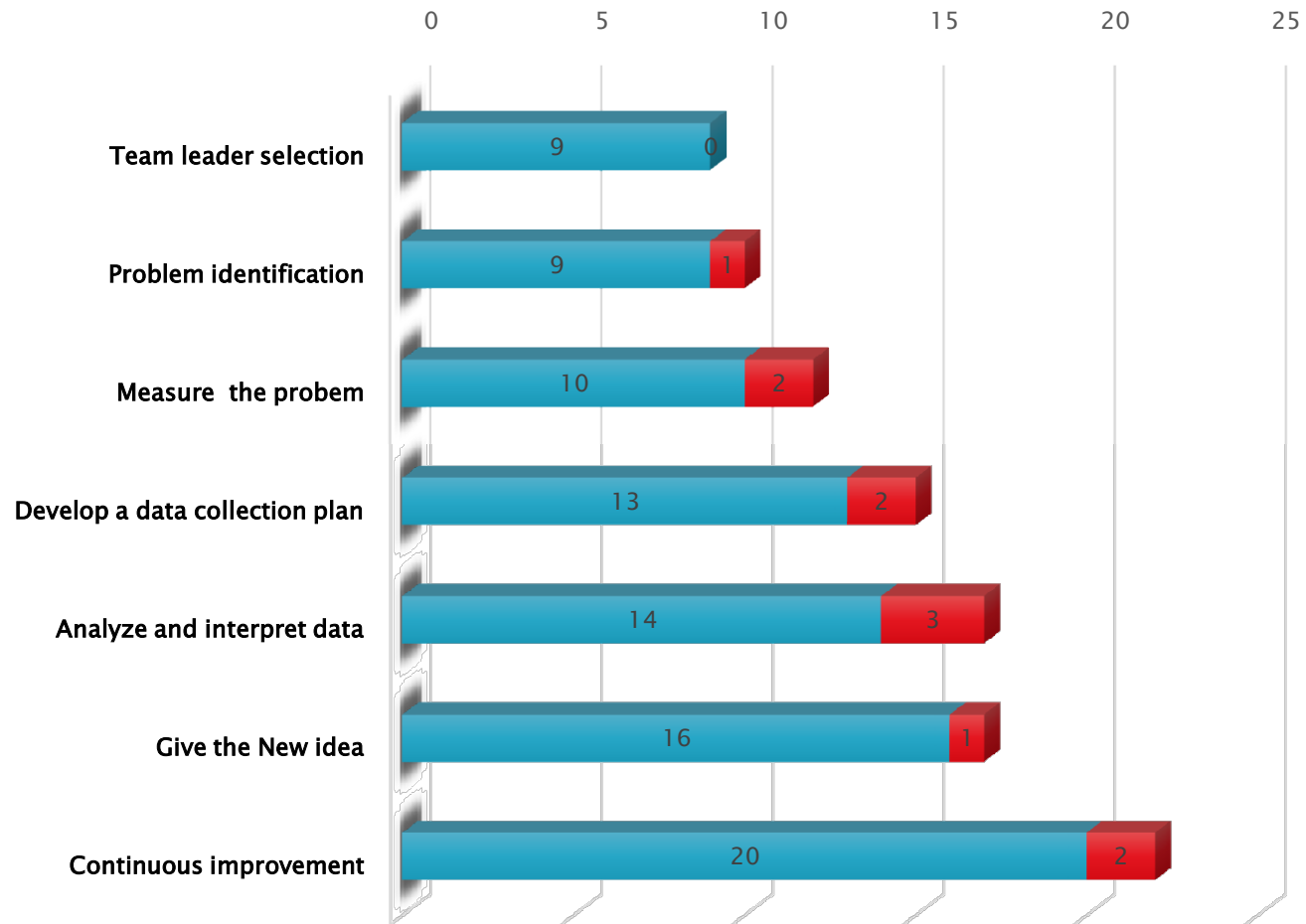
# Define Problem:

1. Samsung market Decline.

2. Burning issue of galaxy note7.

3. Higher cost of Samsung Smartphone than other competitors like one plus, xiaomi etc.

4. No new Design and consumer don't want it look your old phone.

5. Samsung will have to pay import duties on its parts.
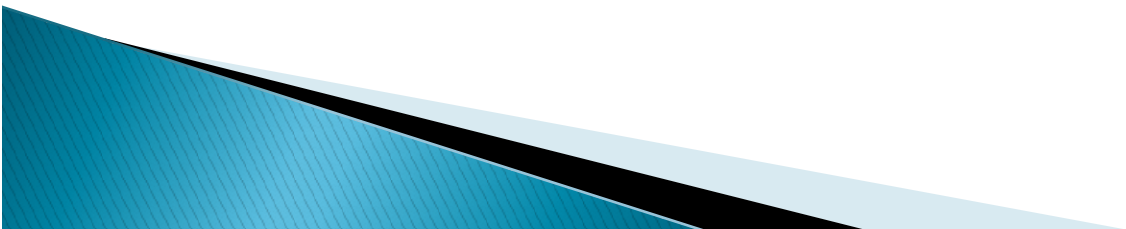
# Measure Phase

▸ The key objective of the measure phase is to gather as much information as possible on the current process

▸ Identify the source for making the data available (measurement scale)

▸ Develop a data collection plan

▸ Describe the problem on the basis of data collected(involve uses of graphical method)

# Data Collection Plan

| Measure | Data Type | Operational Definition | Satisfaction |
|---|---|---|---|
| Most liked Smartphone brand | Nominal Data | Most liked brand as per customer preference | All better features in the smart phone mobile |
| Preferable feature in Smartphone | Ordinal Data | Which features customer want in their Smartphone | All features are running well in their Smartphone |
| Preference pricing of Smartphone | Continuous data | Which Smartphone is suitable for customer's pocket. | Price of smart phone are at affordable cost. |
| Buying a Smartphone in particular interval | Continuous data | Customers changing their Smartphone within particular interval | Get newly updated better featured and at affordable cost |

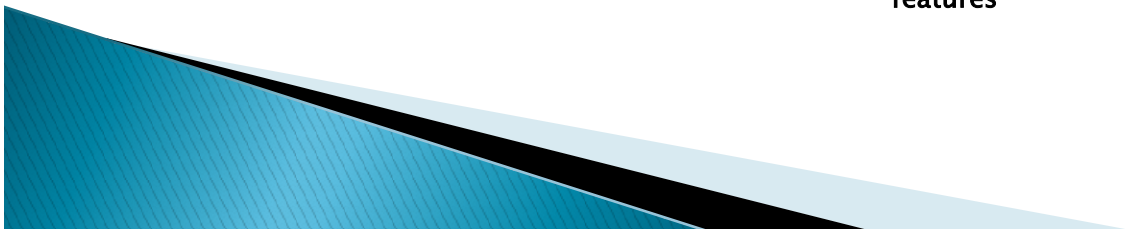| S | I | P | O | C |
|---|---|---|---|---|
| **Supplier** | **Input** | **Process** | **Output** | **customer** |
| Company /Manufacturer | Smartphone | Customer Demand | Deliver order to the customer | All peoples who demanding for particular Smartphone |

Customer Demand

↓

Local distributor

↓

Vendor

↓

Manufacturer
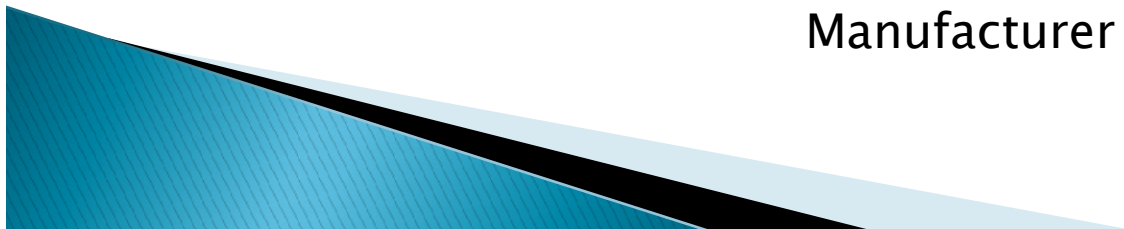
# Histogram For Samsung and one plus Feature Rating



samsung v/s oneplus features rating

**Summary for tech.spe**

Anderson-
A-Sq
P-Val

Mean
StDev
Varia
Skew
Kurto
N

Minim
1st Q
Media
3rd Q
Maxim

95% Confi
119.6
95% Confid
131.0
95% Confi
41.26

95% Confidence Intervals
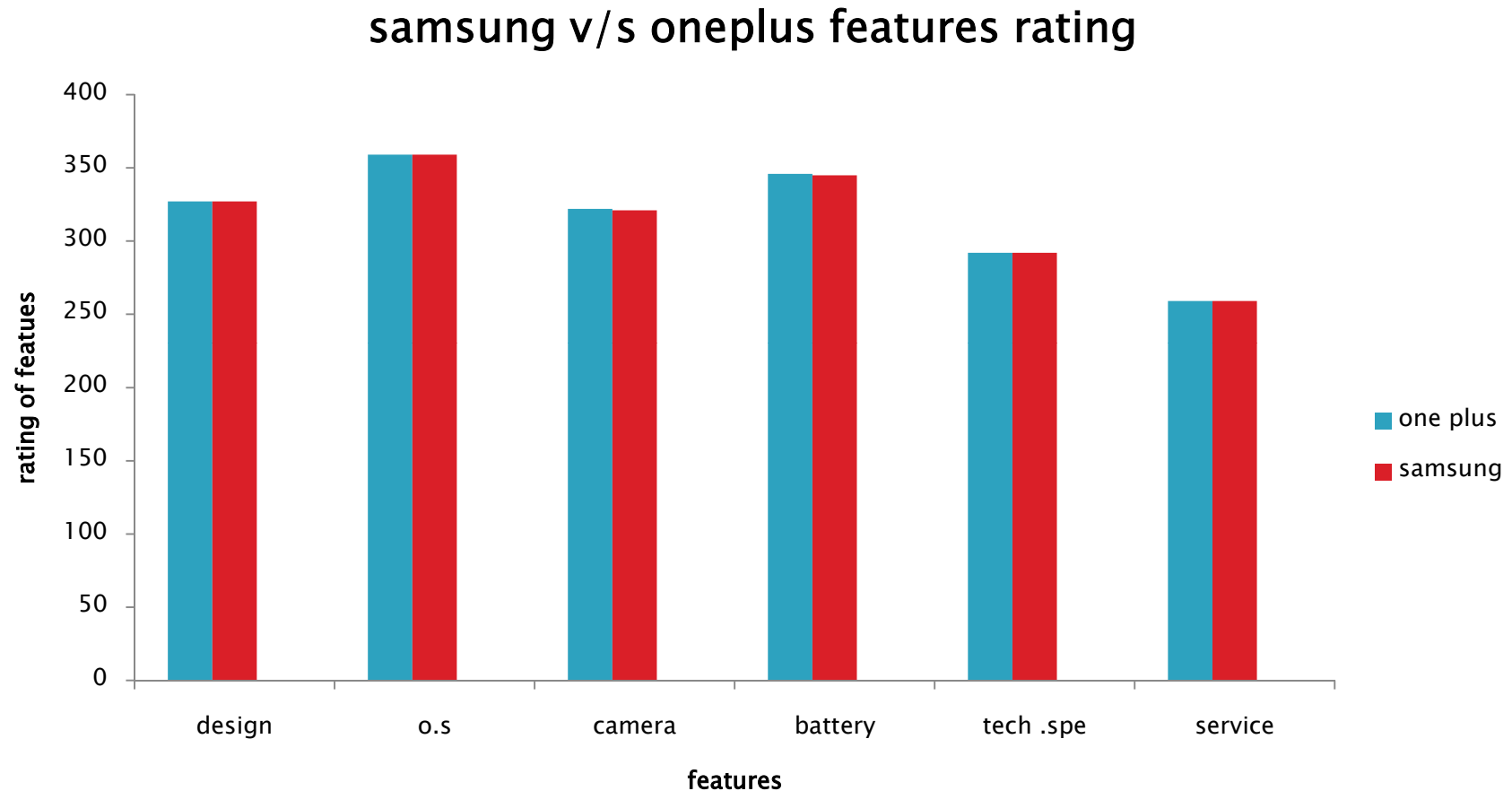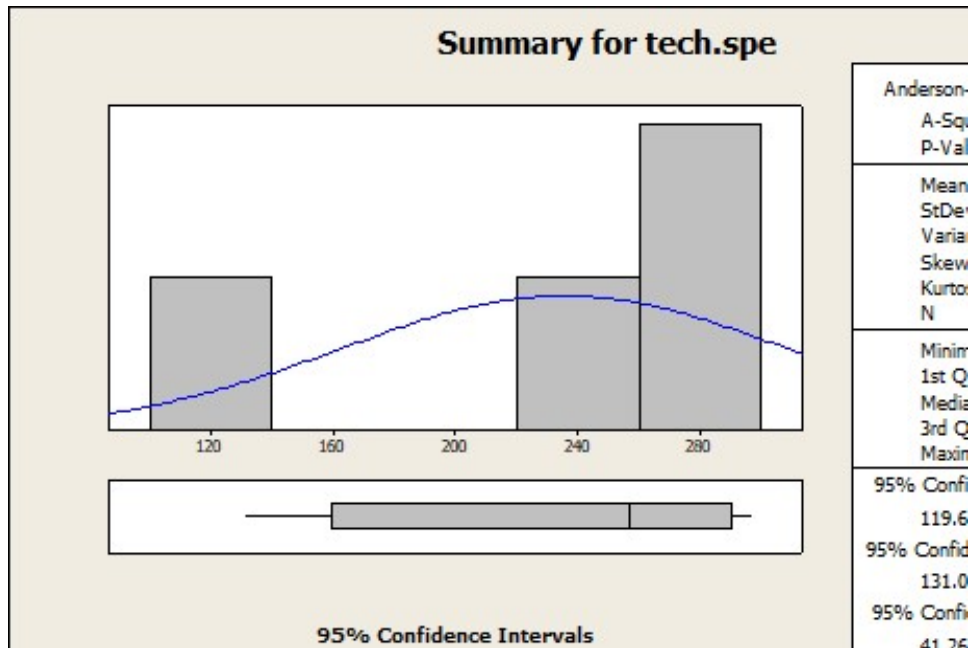
Interpretation for technical specification:
As from the graphical summary data behaves like moderately negatively skewed .
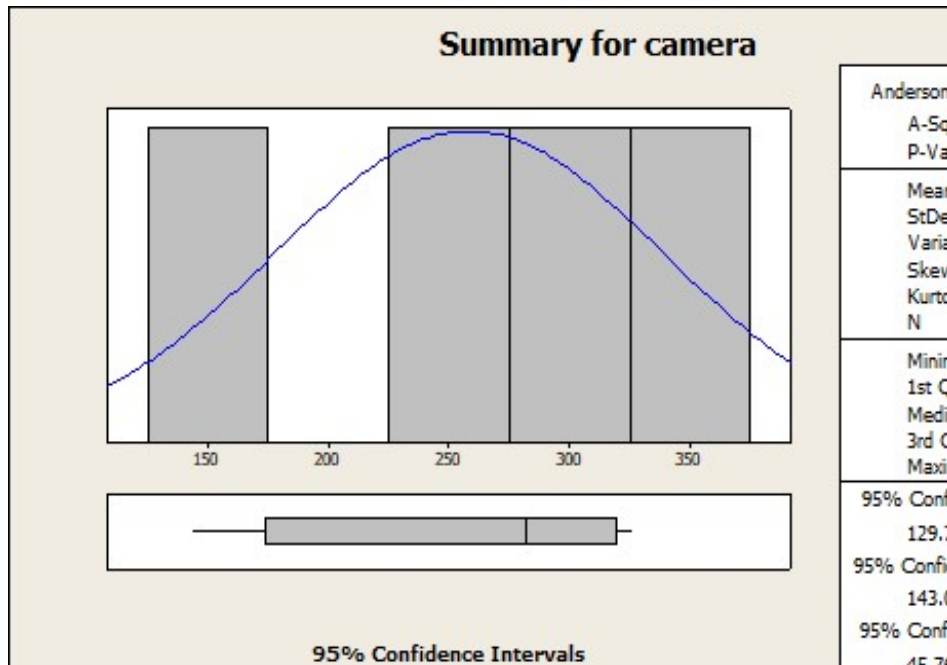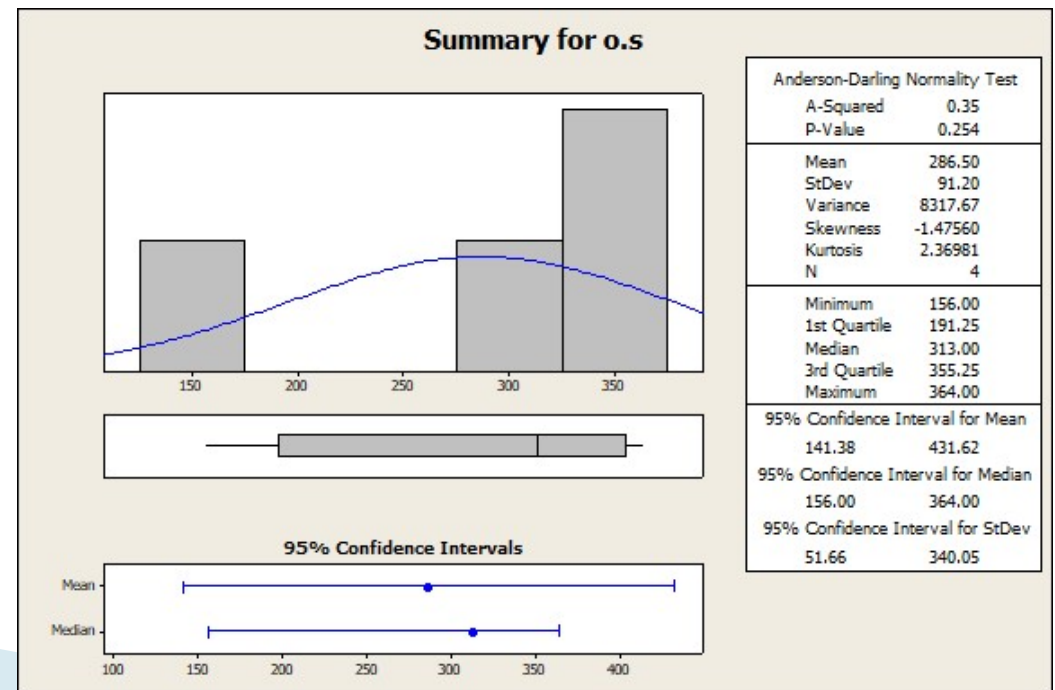Most of the peoples are looking for better technical specifications

Interpretation for battery:
As the graphical summary data behaves like moderately negatively skewed.
Some of the people are looking for better quality of battery


**Summary for battery**

| Anderson-Darling Normality Test | |
|---|---|
| A-Squared | 0.36 |
| P-Value | 0.231 |
| Mean | 277.00 |
| StDev | 86.35 |
| Variance | 7456.67 |
| Skewness | -1.50806 |
| Kurtosis | 2.51587 |
| N | 4 |
| Minimum | 153.00 |
| 1st Quartile | 187.00 |
| Median | 302.50 |
| 3rd Quartile | 341.50 |
| Maximum | 350.00 |

95% Confidence Interval for Mean
139.59          414.41
95% Confidence Interval for Median
153.00          350.00
95% Confidence Interval for StDev
48.92           321.97

95% Confidence Intervals

Mean
Median

## Summary for camera

Anderson-
A-Sq
P-Val

Mean
StDe
Varia
Skew
Kurto:
N

Minim
1st Q
Media
3rd Q
Maxi

95% Confi
129.7
95% Confid
143.0
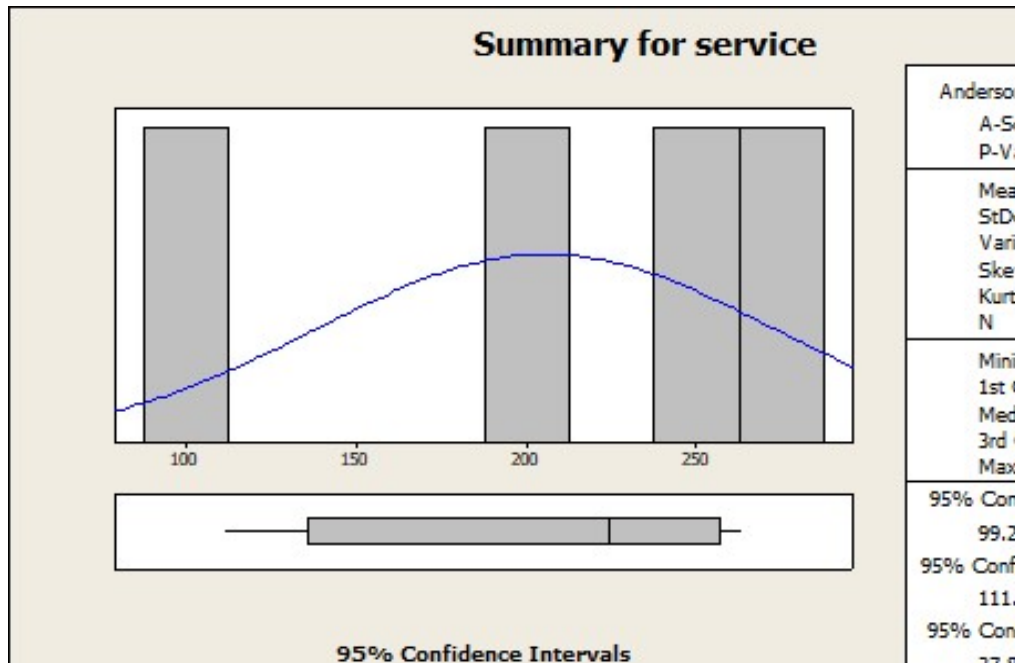95% Confi
45.76

**95% Confidence Intervals**

Interpretation for camera:
As per graphical summary
Data behaves as
moderately negatively
skewed data
So most of the peoples are
not fully satisfied with
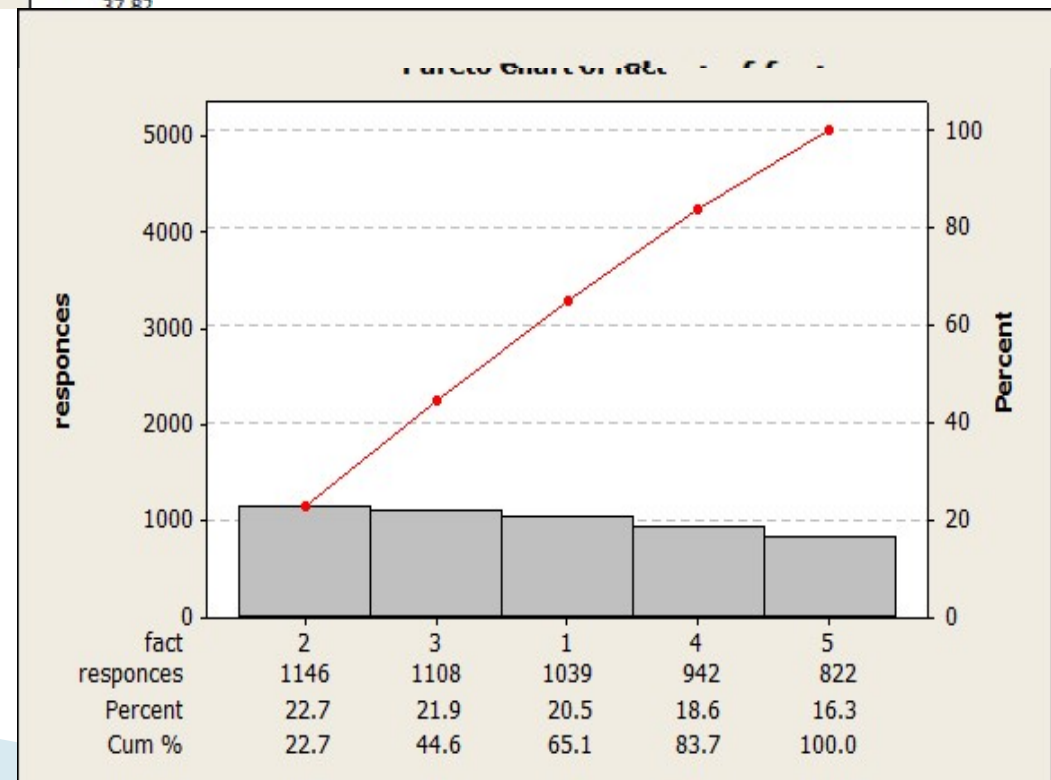camera specification so
company have look   in
camera specifications

Interpretation for
operating system :
As per graphical
summary the data
behaves moderately
negatively skewed so
peoples are looking
for better operating
system than present.

## Summary for o.s

| Anderson-Darling Normality Test | |
|---|---|
| A-Squared | 0.35 |
| P-Value | 0.254 |
| Mean | 286.50 |
| StDev | 91.20 |
| Variance | 8317.67 |
| Skewness | -1.47560 |
| Kurtosis | 2.36981 |
| N | 4 |
| Minimum | 156.00 |
| 1st Quartile | 191.25 |
| Median | 313.00 |
| 3rd Quartile | 355.25 |
| Maximum | 364.00 |

95% Confidence Interval for Mean
141.38          431.62
95% Confidence Interval for Median
156.00          364.00
95% Confidence Interval for StDev
51.66           340.05

**95% Confidence Intervals**

Mean
Median

## Summary for service

95% Confidence Intervals

Anderson-
A-Sq
P-Val

Mean
StDe
Varia
Skew
Kurto
N

Minim
1st Q
Media
3rd Q
Maxir

95% Confi
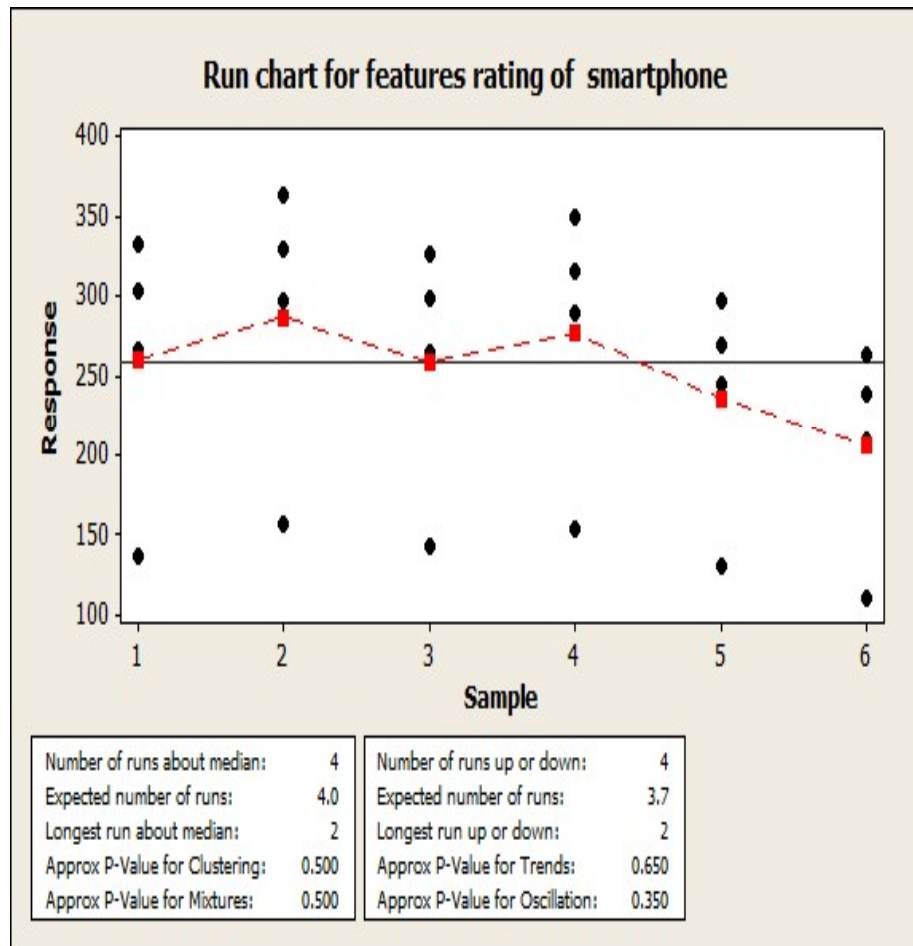99.27
95% Confid
111.0
95% Confi
37.87

Interpretation for services:
As per graphical summary the data behaves moderately negatively skewed so peoples are satisfied with the services of the company.

Interpretation of pareto chart:
By 80-20 percent rule We get two features above the 80% so we have to work on that particular features those features are technical specification and service of company

| fact | 2 | 3 | 1 | 4 | 5 |
|------|------|------|------|------|------|
| responces | 1146 | 1108 | 1039 | 942 | 822 |
| Percent | 22.7 | 21.9 | 20.5 | 18.6 | 16.3 |
| Cum % | 22.7 | 44.6 | 65.1 | 83.7 | 100.0 |

# Run Chart For Features Rating



Run chart for features rating of smartphone

| | | |
|---|---|---|
| Number of runs about median: | 4 | |
| Expected number of runs: | 4.0 | |
| Longest run about median: | 2 | |
| Approx P-Value for Clustering: | 0.500 | |
| Approx P-Value for Mixtures: | 0.500 | |

| | |
|---|---|
| Number of runs up or down: | 4 |
| Expected number of runs: | 3.7 |
| Longest run up or down: | 2 |
| Approx P-Value for Trends: | 0.650 |
| Approx P-Value for Oscillation: | 0.350 |

Interpretation :

From the summary of R- Chart their is no cluster, mixture detected & also their no trend and oscillation. Then we conclude that the data are randomly distributed.

# Analyse

- Identify the cause of the problem.

- Closely examine the process.

- Brainstorm potential causes of the problem.

- Verify the cause of the problem.

# Analysis Tools

- Cause and effect Diagrams

- Histogram

- 5 Why's
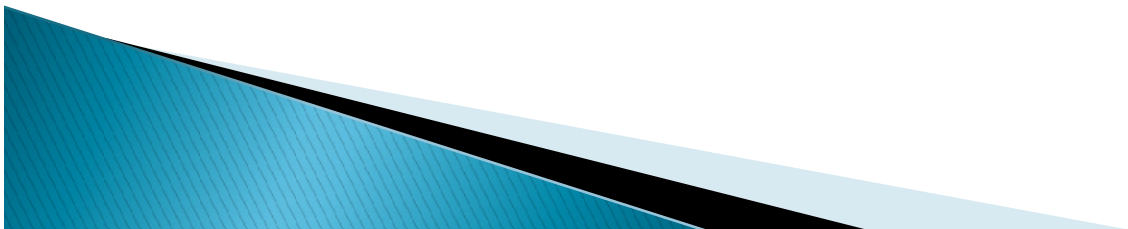
# Fishbone diagram on Decrease in smartphone sells

**Environment**

**Material**

**Manpower**

Natural disaster

Defect in design

Lack of motivational program

Not trained

Defective material

Unskilled employee

Loosing Purchasing power

Late arrive

inventory capacity

Not familier with goods

**Decrease in smartphone sells**

Fall marketing strategy

Fall in reputation

High quality material

Import duties

No automation

High price of products

Work slowdown

**Management**

**Machines**

From the diagram we can say that major problem as,

- Defective material

- Late arrived material

- Unskilled employee

- Fall in reputation

- High price of product
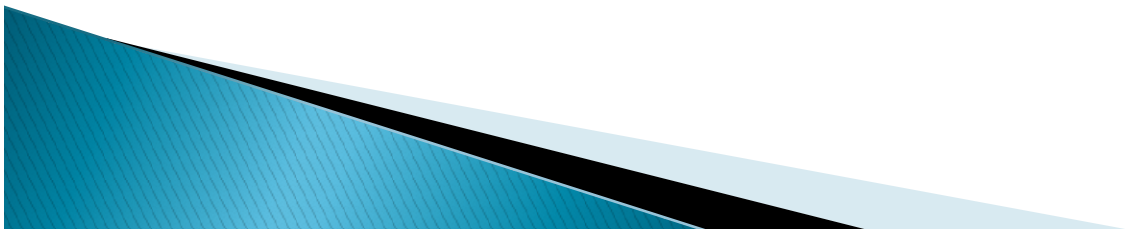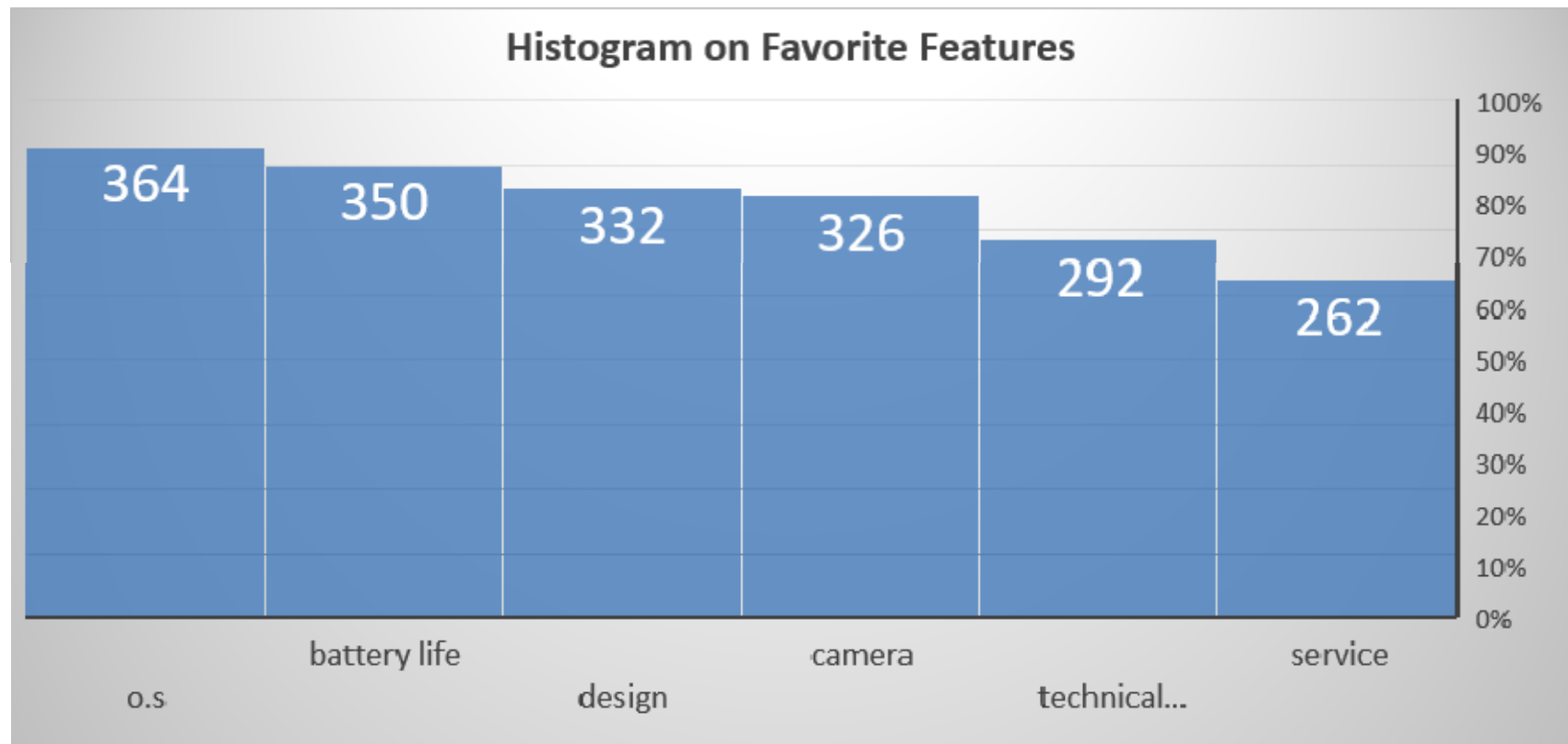
Fishbone diagram on high price of Samsung smartphones
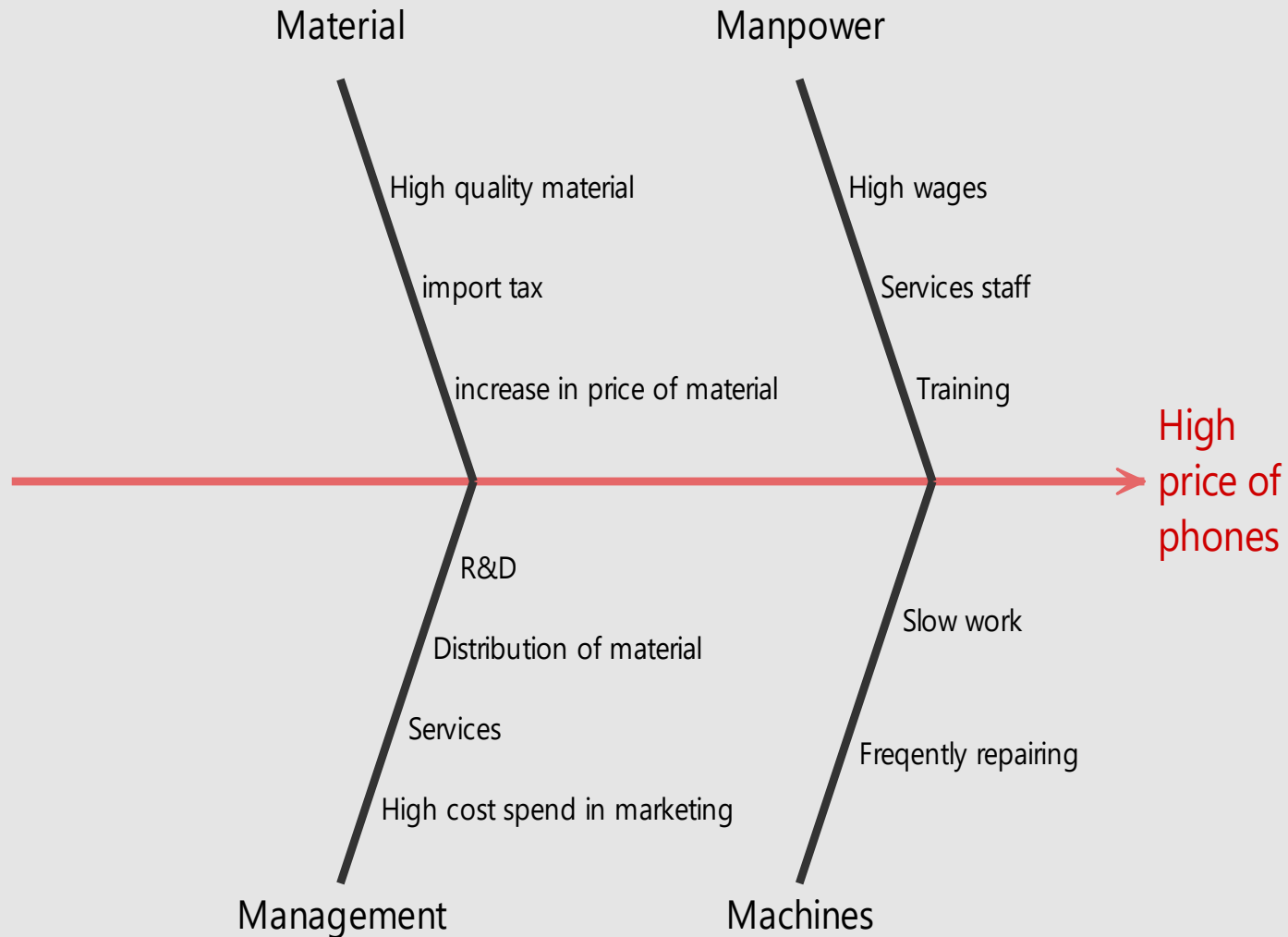
From the diagram we can say that major problem as,

- High quality material

- Import tax

- High wages of employee

- R & D

- High cost spend in marketing
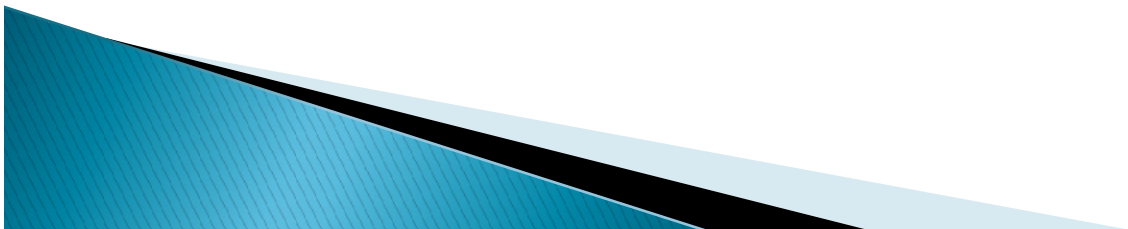
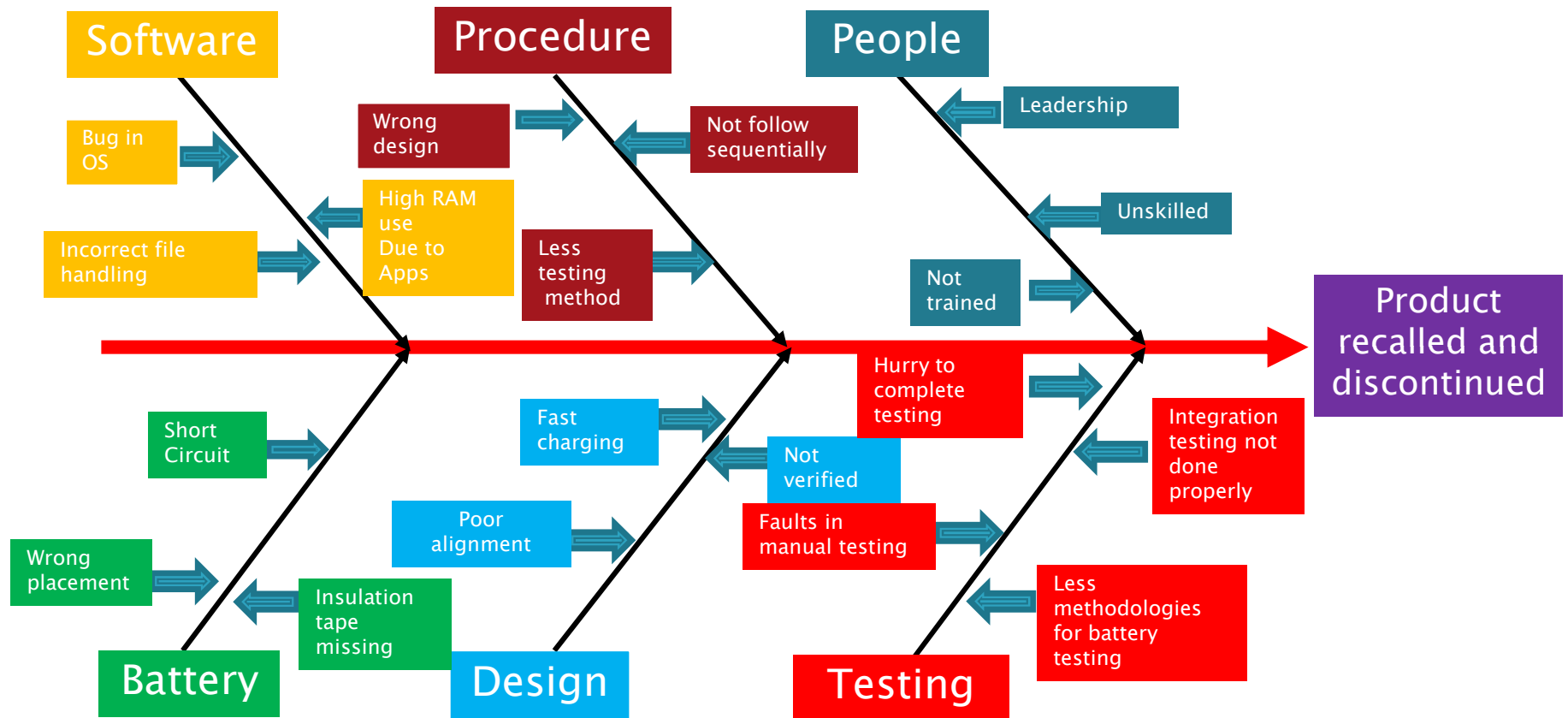# Histogram on Most preferable Features:



Histogram on Favorite Features

# Fishbone diagram:

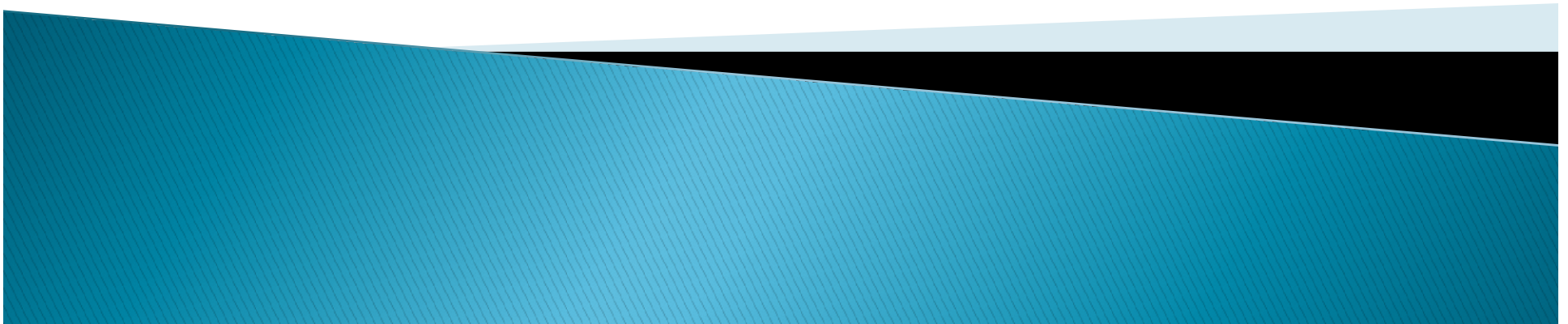# Root Cause Analysis through 5 Why ?

1. Why has Samsung's reputation crashed?
Because the problem in Samsung Galaxy Note7.

2. Why is the problem in Samsung Galaxy Note7?
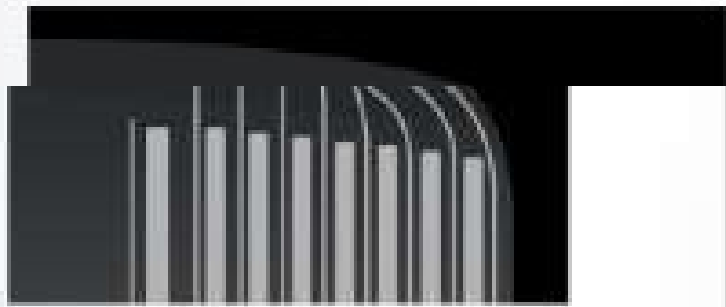Because the battery is exploding(Burn).

3. Why is the battery exploding?
Because the short circuit occurs in battery.

# 4. Why did the short circuit occurs in battery? Because the negative electrode was deflected.
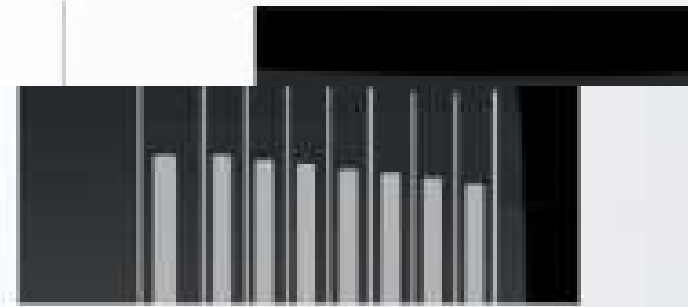


Abnormal

Norma

Main Cause

The negative electrode was deflected in the upper-right corner of the battery
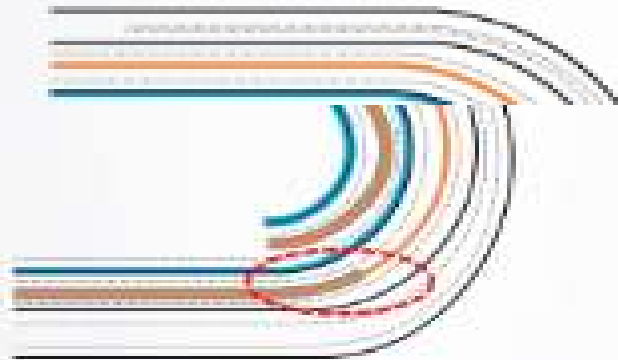
The negative electrode is not deflected

## 5. Why was the negative electrode defected?

Because the tip of the negative electrode was incorrectly located in the curve.
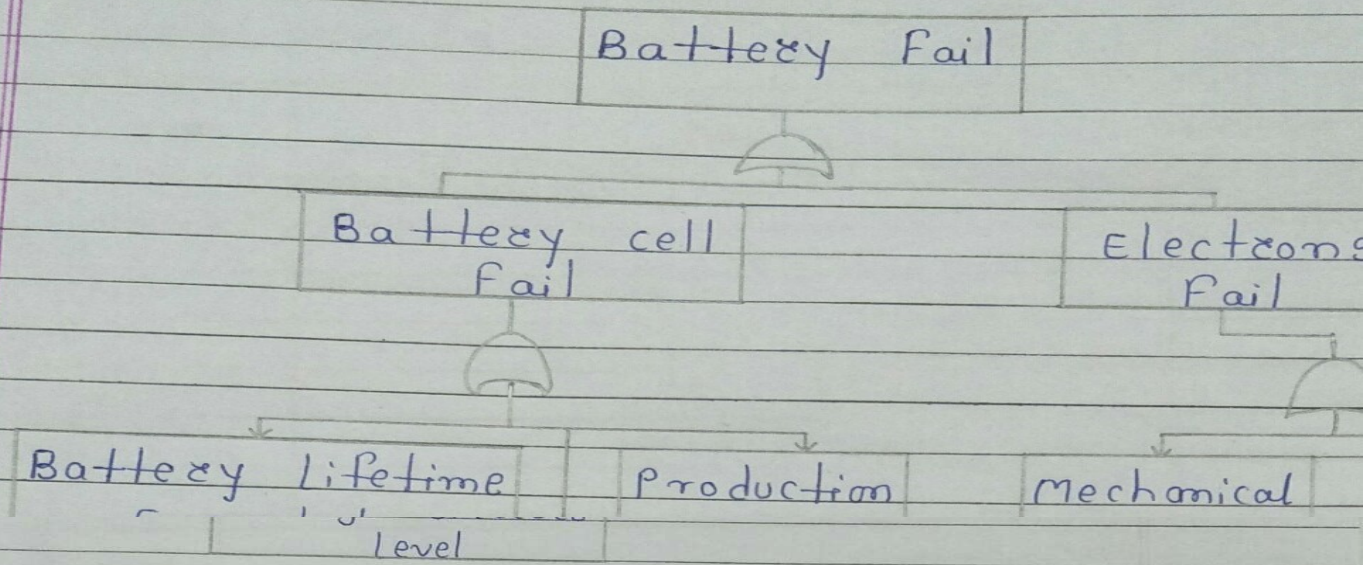


Additional contributing factor

The tip of the negative electrode was incorrectly located in the curve, not the planar area

The tip of the negative electrode is correctly located within the planar arena

```
                    ┌─────────────────────┐
                    │   Battery   Fail    │
                    └──────────┬──────────┘
                              ╭──╮
          ┌───────────────────┴────────────────────┐
┌─────────────────────┐                    ┌─────────────────────┐
│   Battery   cell    │                    │    Electrons        │
│        Fail         │                    │       Fail          │
└──────────┬──────────┘                    └──────────┬──────────┘
          ╭──╮                                       ╭──╮
    ┌──────┴───────┐                           ┌──────┴───────┐
```

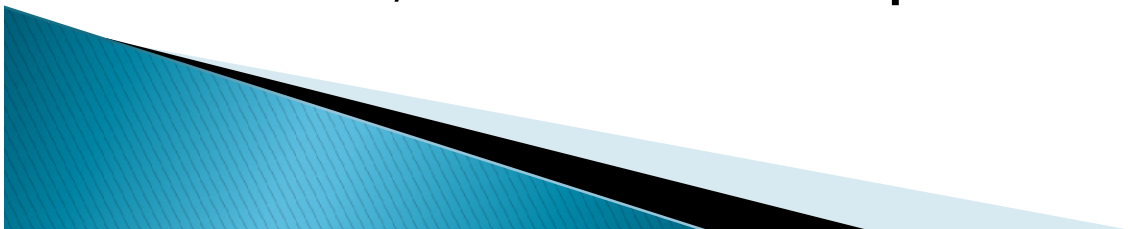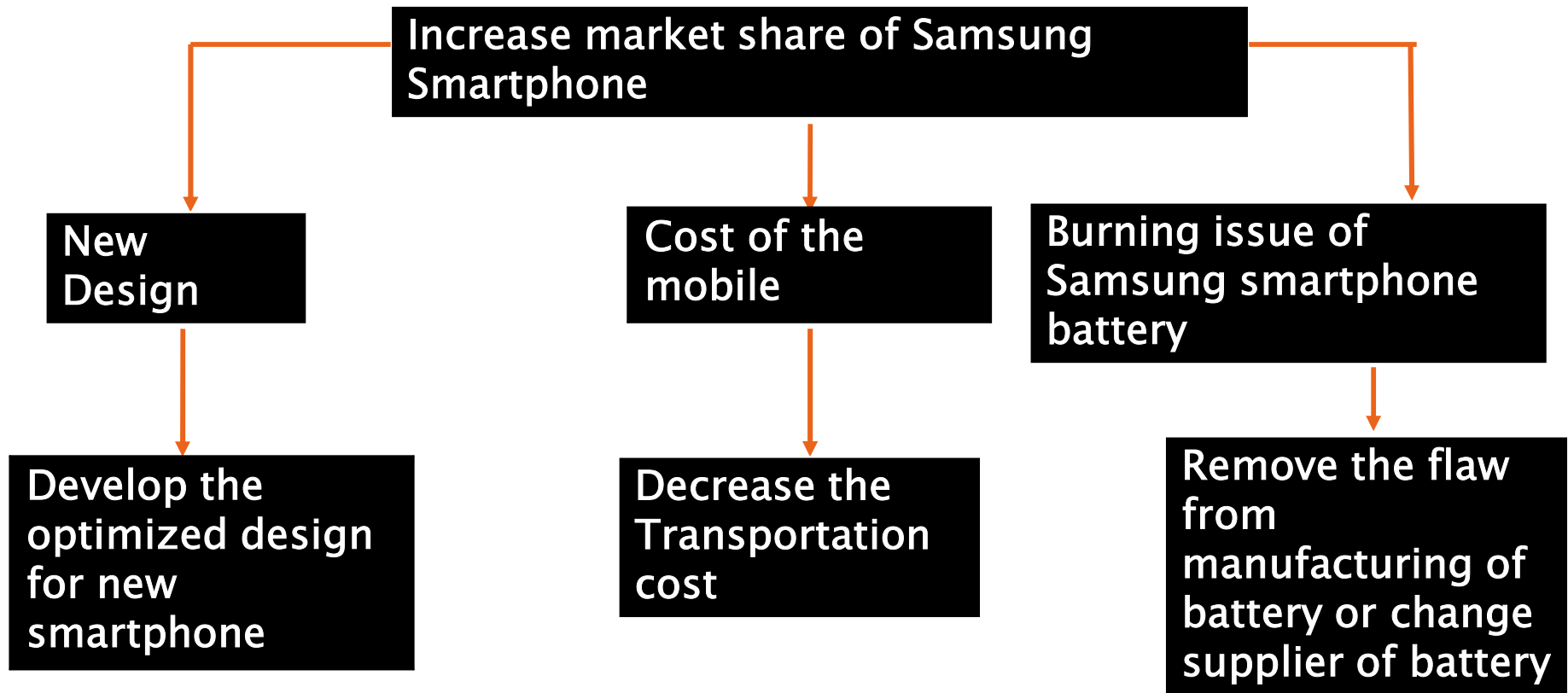| Battery lifetime level | Production | Mechanical |
|---|---|---|

Conclusion :-

   It has shown that the cell phone contains almost no redundancies since no AND gate was used unfortunately we don't have data for more detailed analysis and incorporation of failure probabilities.

# Improve Phase

- ❖ I – Improve the process by eliminating defects.

- ▸ Perform design of experiments.

- ▸ Develop potential solutions.

- ▸ Define operating tolerances of potential system.

- ▸ Assess failure modes of potential solutions.

- ▸ Validate potential improvement by pilot studies.

- ▸ Correct/Re- Evaluate potential solution.

# FLOWCHART FOR IMPROVEMENT

Increase market share of Samsung Smartphone

New Design

Cost of the mobile

Burning issue of Samsung smartphone battery

Develop the optimized design for new smartphone

Decrease the Transportation cost

Remove the flaw from manufacturing of battery or change supplier of battery

# SUGGESTIONS

▸ Approximately 60% of the major components used in Samsung Smartphone import from Other countries so we have  to minimize it for reducing transportation cost which is beneficial for "Make in India" campaign.

▸  Add some new component in battery to get  better quality of battery or change the dealer of battery.

▸ Minimize manpower to assemble the Smartphone and increase the machinery.
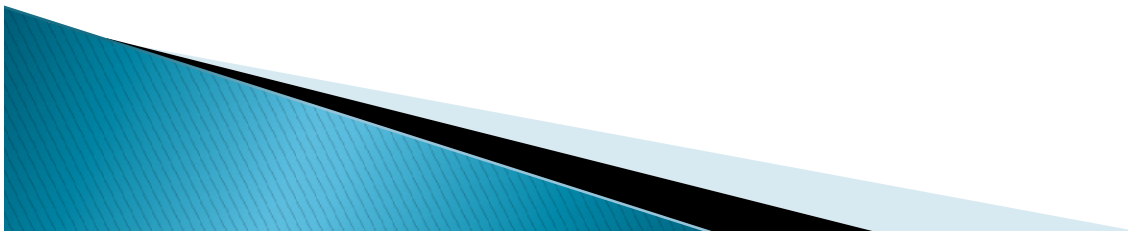
# Control

- The control phase is the final phase of lean six sigma. The team focus on how to sustain newly achieved improvements by passing it on other employees.

- Implement Control Plan for process.

- Verify long term capability.

- Continuously improve process.

- Documentation.
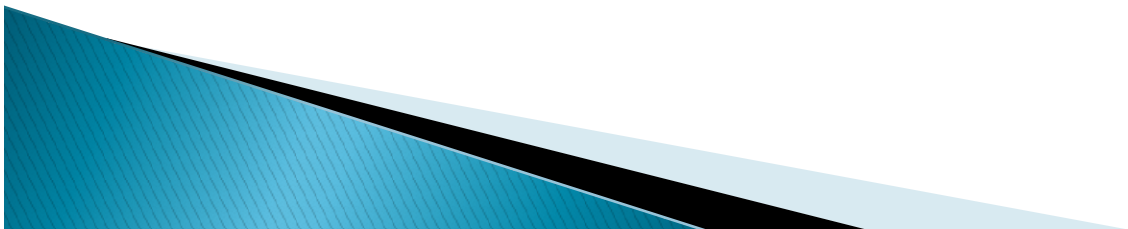
# Poka Yoke

- Having a proper vendor selection process.

- Quality check report of the batteries should be provided by the vendors.

- Samsung should have a dedicated testing lab with skilled employees.

- Samsung should produce own batteries so that quality is not compromised.

- The company should produce body fitted batteries.

- Notify users to not use their phones if the battery is over used and passes the heating temperature threshold.

# Control Chart For Features Rating



Xbar-R Chart of Resp
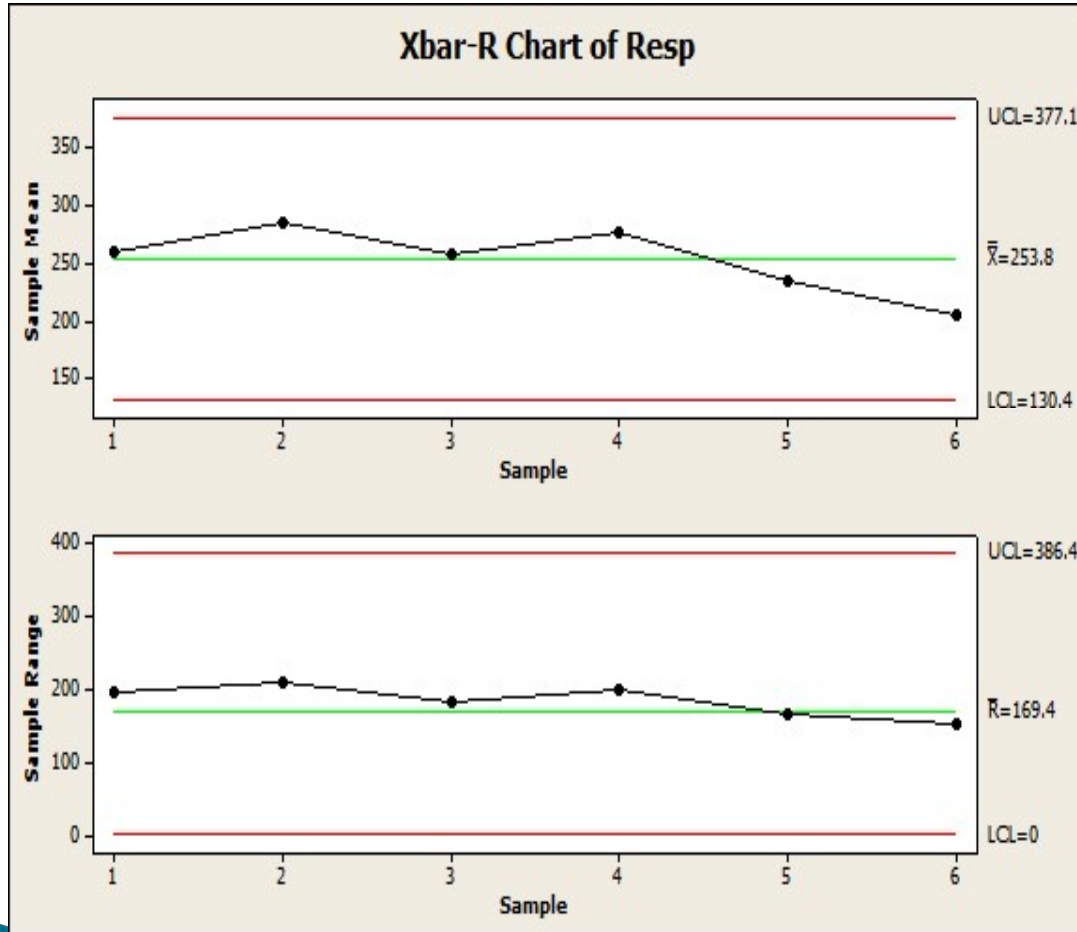
Interpretation :
All points lies within the one sigma limits with small variation. The process is out of control. so problem detected is with one standard deviation, greater variation would expected.

R&D PRODUCTION MARKETING

Form a new product idea → Analyse market potential

Viable market? — No → Cancel Project
Viable market? — Yes → Build prototype

Build prototype — No → Manufacturable?

Viable prototype — Yes → Determine Manufacturability
Viable prototype — No → Cancel Project

Determine Manufacturability → Manufacturable? — Yes → Begin Production

Begin Production → From Marketing Plan
Begin Production → Release Product

From Marketing Plan → Start Marketing Product → Release Product