# Case Study on Testing of Hypothesis

1. The table below lists the market share in 2010 of the four firms that manufacture a particular product. A marketing analyst wonders whether the market shares have changed since 2010. He surveys 200 customers. The last column of the table shows the number of customers who recently purchased the product at each firm.

| Firm | Market share in 2010 | No. of recent customers |
|------|---------------------|------------------------|
| 1 | 0.4 | 70 |
| 2 | 0.32 | 60 |
| 3 | 0.24 | 54 |
| 4 | 0.04 | 16 |

1. Specify the competing hypotheses to test whether the market shares have changed since 2010.
2. Calculate the value of the test statistic
3. At the 5% significance level, what is the critical value?
4. Have the market shares changed since 2010?

2. A phone manufacturer wants to compete in the touch screen phone market. He understands that the lead product has a battery life of just 5 hours. The manufacturer claims that while the new touch phone is more expensive, its battery life is more than twice as long as that of the leading product. To test the claim, a researcher samples 45 units of the new phone

and finds that the sample battery life averages 10.5 hours with a sample standard deviation of 1.8 hours.

1. Set up the relevant null and alternate hypothesis
2. Compute the value of the appropriate test statistic
3. Use the critical value approach to test the phone manufacturer's claim at $\alpha$ = 0.05.

Please note the following:
Write your answers in a word doc and show the calculations in the excel sheet.
You must do a screen recording of your work which needs to be submitted.
Please follow 'video submission guidelines' for submitting.