Hypothesis Testing - Population Proportion - Right Tailed Test

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### The manager considers a random sample of 200 consumers, which shows the acceptance rate as 32%.

### Assuming the level of significance a of 0.05, let’s perform hypothesis testing to conclude an action.

### SOlution

## Step 1:

### Set up null hypothesis and alternative hypothesis

### H0 = P <= 0.3 # Null Hypothesis

### H1 = P > 0.3 # Alternative Hypothesis - Upper tailed test

α = 0.05 # level of significance  
n = 200 # Sample Size  
p = 0.32  
P = 0.3

## Step 2: Compute Test Statistics

Z = (p-P)/sqrt((P\*(1-P))/n)  
Z

## [1] 0.6172134

### Step 3: Compute critical value for significance level = 0.05 or Confidence Interval = 95%

Zα = qnorm(1-α, lower.tail = FALSE)  
Zα

## [1] -1.644854

## Step 4: Compare Test statistic with critical value and conclude the test

if ( abs(Z) <abs(Zα)){  
 print (" Z is not significant and the null hypothesis may, therefore, be accepted")  
} else {  
 print(" Z is significant and the null hypothesis is rejected")  
}

## [1] " Z is not significant and the null hypothesis may, therefore, be accepted"

### Since |Z| = O.62 < Zα = 1.645

## Accept Ho at 5% level of significance.

## Recommended Action: Manager should not introduce the new product in the market.