Question Two (4-Points)

A survey of 200 executives revealed that 114 of them would rather leave message with a voice mail system than a person. Test the claim that more than half of all executives prefer voice mail systems to leaving a message with a person .Use $\alpha = 0.05$

$n = 200, \quad x = 114, \quad \bar{p} = \frac{114}{200} = 0.57$

1. The hypothesis are:

H_0: $p \leq .5$ H_A: $p > .5$ (1)

2. The test statistic value:

$$Z_c = \frac{\bar{p} - p_0}{\sqrt{\frac{p_0(1-p_0)}{n}}} = \frac{.57 - .50}{\sqrt{\frac{(.5)(.5)}{200}}} = 1.98 \quad (1)$$

3. Decision Rule: (1)

$Z_\alpha = Z_{.05} = 1.645$

Reject H_0 if $Z_c > Z_\alpha$

$1.98 > 1.645$ ✓

$\therefore$ Reject H_0.

P-value $= P(Z > 1.98)$

$= .5 - .4761 = .0239$

Reject H_0 if P-value $< \alpha$

$\Rightarrow .0239 < .05$

$\therefore$ Reject H_0.

4. Conclusion

The claim is correct. (1)

or: More than half of all executives prefer voice mail systems to leaving a message with a person.