Speial Assignment-6

T-shirt

In a Company 1,00,000 employees is there. Company wants to distribute to the T-shirts to the employees. Sample 500. 300 members said XL, 200 members said L

How many XL, L. T-shirts should be ordered?

Ans:- For XL T-shirts:-

$n = 500$, $x = 300$, C.I = 95%. $\alpha = 0.05$

$\alpha = 0.05$.

$Z\frac{\alpha}{2} = Z_{\frac{0.05}{2}} = Z_{0.025} = 1.96$

$EBP = (Z\frac{\alpha}{2})\sqrt{\frac{pq}{n}}$

$p' = \frac{x}{n} = \frac{300}{500} = 0.60$

$q' = 1 - p' = 1 - 0.60 = 0.40.$

$EBP = (Z\frac{\alpha}{2})\sqrt{\frac{p'q'}{n}}$

$= (1.96) \sqrt{\frac{(0.6)(0.40)}{500}}$

$= 1.96 \sqrt{\frac{0.24}{500}}$

$= 1.96 \times \frac{0.489}{22.36}$

$= \boxed{0.042}$

$p' - EBP = 0.60 - 0.042 = 0.558$

$p' + EBP = 0.60 + 0.042 = 0.642$

Conclusion: We Estimate with 95% Confidence Interval. that true percent of all XL should be ordered is between **55.8% and 64.2%**

For L T-shirts

$n = 500, x = 200, C.I = 95\%, \alpha = 0.025, \frac{\alpha}{2} = 1.96$

$p' = \frac{x}{n} = \frac{200}{500} = 0.40.$

$q' = 1 - p' = 1 - 0.40 = 0.60$

$EBP = (2\frac{\alpha}{2}) \sqrt{\frac{p'q'}{n}}$

$= 1.96 \sqrt{\frac{(0.4)(0.6)}{500}} = 1.96 \sqrt{\frac{0.24}{500}} = 0.042$

$p' - EBP = 0.40 - 0.042 = 0.358$

$p' + EBP = 0.40 + 0.042 = 0.442.$

Conclusion: with 95% confidence Interval the percentage of L should be between (35.8% and 44.2%)

Concluding:- For 1,00,000 Employees we should order 55.8% to 64.2% [XL] T-shirts which means,

~~55,800 to~~

between 55ew and 64,200 XL T-shirts should be ordered

* For 1,00,000 employes we should order 35.8% to 44.2% [L] T-shirts which means

between 35ew and 44,200 L T-shirts should be ordered.