

Randomized block design (RBD)

(or)

Two way classification.

It is a 2 factor experiment.

Procedure:

Step 1:

Null hypothesis: H_0 : There is no significant difference between columns and rows.

Alternative hypothesis: H_1 : There is a significant difference between columns and rows.

Step 2: * Find N

* Find T

* Find $C.F = \frac{T^2}{N}$

Step 3: * Find $SST = \sum x_1^2 + \sum x_2^2 + \dots - C.F$

* Find $SSC = \frac{(\sum x_1)^2}{C_1} + \frac{(\sum x_2)^2}{C_2} + \dots - C.F$

* Find $SSR = \frac{(\sum y_1)^2}{r_1} + \frac{(\sum y_2)^2}{r_2} + \dots - C.F$

* Find $SSE = SST - SSC - SSR$

Step 4: ANOVA Table:

Source of variation	Degrees of freedom	Sum of squares	Mean sum of squares	Variance ratio	Table value
Between columns	$C-1$	SSC	$MSC = \frac{SSC}{C-1}$	$F_c = \frac{MSC}{MSE}$	$F_{\alpha}(C-1, (C-1)(r-1))$
Between rows	$r-1$	SSR	$MSR = \frac{SSR}{r-1}$	$F_r = \frac{MSR}{MSE}$	$F_{\alpha}(r-1, (C-1)(r-1))$
Between errors	$(C-1) \times (r-1)$	SSE	$MSE = \frac{SSE}{(C-1)(r-1)}$		

Step 5: Decision:

If $F_c < F_{\alpha}$, $F_r < F_{\alpha}$, H_0 is accepted otherwise it is rejected.