TOPIC 4

SNACKS

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Problem Statement -

a) Find the Spearman correlation matrix of all the ordinal attributes

b) Determine the coefficient of determination (Spearman).

c) Interpret the result from the two tables.

Spearman correlation matrix

We find the correlation matrix for the ordinal attributes, using Spearman’s correlation formula. We note that

a. Liking Scores and Crunchiness are have a moderately strong positive correlation, as compared to the other variables. r = 0.4659

b. Saltiness and Liking Scores have a weak to moderate correlation r = 0.2722.

c. Sweetness and acidity show weak to moderate correlation r = - 0.2227.

d. Rest of the combinations are very weakly correlated as shown below.

> cormat <- cor(SNACKS, method = "spearman")

> print(cormat)

Liking scores Saltiness Sweetness Acidity Crunchiness

Liking scores 1.00000000 0.27220415 0.02989934 -0.03451333 0.46590771

Saltiness 0.27220415 1.00000000 -0.12160131 -0.07715498 0.11290395

Sweetness 0.02989934 -0.12160131 1.00000000 -0.22275703 -0.08096516

Acidity -0.03451333 -0.07715498 -0.22275703 1.00000000 0.15770467

Crunchiness 0.46590771 0.11290395 -0.08096516 0.15770467 1.00000000

R2 Values

We square each matrix element to get r-quared values, ie the coefficient of determination

The values follow the same trend as that of the correlation matrix, with 0.2171 (21.71%) of the variance in Liking Scores attributed to Crunchiness, followed by 0.07409(7.41%) explained by Saltiness.

> print(cormat\*cormat)

Liking scores Saltiness Sweetness Acidity Crunchiness

Liking scores 1.0000000000 0.074095099 0.0008939706 0.001191170 0.217069995

Saltiness 0.0740950985 1.000000000 0.0147868788 0.005952891 0.012747302

Sweetness 0.0008939706 0.014786879 1.0000000000 0.049620692 0.006555357

Acidity 0.0011911700 0.005952891 0.0496206923 1.000000000 0.024870763

Crunchiness 0.2170699945 0.012747302 0.0065553573 0.024870763 1.000000000