BA\_HW2 金融三 陳品安106302049

1.



1. The matrix form shows that each row represents a transaction, and the columns are different cosmetic products. The values of the matrix form show whether that kind of the cosmetics is in the transaction or not. For example: In transaction 6, the customer bought the concealer, so the value is 1. Because the customer didn’t buy like bag, brushes, the values would be 0.



(b)-1

The confidence of the first row means that given we see blush, concealer, mascara, eye shadow and lipstick in a transaction, what’s the probability that we see eyebrow pencil? The calculation would be :

Confidence=P(eyebrow pencil｜blush, concealer, mascara, eye shadow, lipstick)

= (number of transactions with eyebrow pencil, blush, concealer, mascara, eye shadow, lipstick) / (number of transactions with blush, concealer, mascara, eye shadow, lipstick)

=0.3023

(b)-2

Support ensures that items (blush, concealer, mascara, eye shadow, lipstick ) that occur relatively frequently in transactions.

The calculation would be :

Support = P(blush, concealer, mascara, eye shadow, lipstick)

= (number of transactions with blush, concealer, mascara, eye shadow, lipstick) / (total number of transactions)

= 0.013

(b)-3

Lift examines how much the rule improves occurrence of the consequent item without the rule. That is, the probability buying consequent increases x percent when we see antecedent.

The calculation would be :

Lift = P(eyebrow pencil｜blush, concealer, mascara, eye shadow, lipstick) / P(eyebrow pencil)

= P(eyebrow pencil, blush, concealer, mascara, eye shadow, lipstick) / P(eyebrow pencil) X P(blush, concealer, mascara, eye shadow, lipstick)

= 7.1982

(b)-4

If blush, concealer, mascara, eye shadow and lipstick are purchased, then we are 30.23% confident that eyebrow pencil will also be purchased. This rule would be 719% better than purchasing eyebrow pencil only.

(c)-1

(c)-2