Association Rules ( Market Basket Analysis)

(C3T4 )

Electronidex data set had transactions with

9835 rows (elements/itemsets/transactions) and

125 columns (items) FIG:1

most frequent items:

iMac HP Laptop CYBERPOWER Gamer Desktop

2519 1909 1809

Apple Earpods Apple MacBook Air (Other)

1715 1530 33622

Item frequency Plot shown below (Top 60 items)

A picture containing text

Description automatically generated

Apriori Algorithm – 1

Conducted MBA using Apriori algorithm with the following param values for support and confidence which yielded 23 rules. All rules had TOP 2 items from frequency plot on RHS . There were no redundant rules.

prodRules<- apriori(tr, parameter = list(supp=0.003, conf=0.7))

Plotted using Parallel coord plot and group plot

Chart

Description automatically generatedA picture containing chart

Description automatically generatedChart, line chart

Description automatically generatedChart, line chart

Description automatically generated

Apriori Algorithm – 2

Increased Confidence and decreased support to increase rule count to make relevant results (rules which made intuitive sense)

prodRules2<- apriori(tr, parameter = list(supp=0.001, conf=0.9))

This algorithm yielded 197 rules , 17 Redundent rules ( which were removed)

Final rule count 180 rules

. A close-up of a document

Description automatically generated with low confidence

In this case #2 ViewSonic Monitor on RHS had the most lift 90%. In order to obtain what items were purchaed along with ViewSonic monitor ran the command below to see frequently purchased items .

rulesinVSmonitor <- subset(prodRules\_bylift2, items %in% "ViewSonic Monitor")

as(rulesinVSmonitor, "data.frame")

plot(rulesinVSmonitor, method = "grouped")

A picture containing table

Description automatically generated

The plot above shows how strongly correlated HP Laptop, IMac, Lenovo desktop computer and other items which were top in frequently bought items are. Refer back to FIG1

Referring back to Sales Prediction report for Blackwell

Chart, box and whisker chart

Description automatically generated

Since Blackwell had low sales on PC’s and Mac compared to game console and accessories it would be beneficial to Blackwell in acquiring Electronidex due to the following reasons.

1. Electronidex has most sales in Mac, Pc
2. Items frequently bought with the Pc’s and Mac were other accessories

This acquisition could Boost PC and Mac sales for Blackwell and also improve more accessories to be bought with PC and MAC.