**# Market Basket Analysis**

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# Version 1.0

# Date : 16.05.2019

# We have historical sales data and new product data sets

# Need to Predict sales of four different product types

(PC, Laptops, Netbooks and Smartphones)

**#loading the library####**

library(arules)

library(arulesViz)

library(rattle)

library(prabclus)

library(RColorBrewer)

library(MASS)

library(mclust)

library(ggplot2)

**#loading the dataset####**

dataset <- read.transactions("ElectronidexTransactions2017.csv", format = "basket", sep=",")

dataset <- read.transactions("ElectronidexTransactions2017.csv", format = "basket", sep=",",

cols = NULL, rm.duplicates = TRUE, encoding = "utf8")

**# view the transactions####**

inspect (dataset)

# Number of transactions.

length (dataset)

# Number of items per transaction

size (dataset)

#Lists the transactions by conversion (LIST must be capitalized)

LIST(dataset)

# Summary of the dataset

summary(dataset)

**#Visualize your dataset#####**

#Plot top10

itemFrequencyPlot(dataset, topN = 10)

itemFrequencyPlot(dataset, topN=10,type="relative",col=brewer.pal(8,'Pastel2'),

main="Relative Item Frequency Plot", srt=90, las= 2)

#Plot the top 20

itemFrequencyPlot(dataset, topN = 10)

itemFrequencyPlot(dataset,topN=10,type="relative",col=brewer.pal(8,'Pastel2'),

main="Relative Item Frequency Plot")

itemFrequencyPlot(dataset, topN = 10, type = "absolute", col = brewer.pal(8,'Pastel2'),

main = "Absolute Frequency Plot", srt=90, las= 2)

image (sample(dataset,150))

image(sample(dataset,20))

image(sample(dataset, expand.grid (1:125, 1:125, col = mat, axes = FALSE)))

# To see the item labels

itemLabels(dataset)

**#apply Apriori Algorithm**

##finding association rules####

rules <- apriori(dataset, parameter = list(supp = 0.012, conf = 0.05, minlen = 2))

rules

summary(rules)

inspect(rules)

**#Evaluate the model**

#rules <- sort(rules, by = 'support', decreasing = T)

#rules

rulesBylift <- sort(rules, by = "lift")

rulesBylift

inspect(rulesBylift)

#view rules

inspect(rulesBylift[1:20])

plot(rulesBylift, method = "grouped",

measure = "support", horiz= TRUE, shading = "lift",

interactive = FALSE, data = NULL, control = list(col=rainbow(5)))

**#find relations with imac and other items####**

imac.rules<- apriori(dataset, parameter = list(supp=0.01,conf= 0.02, minlen = 2),

appearance = list(lhs="iMac"))

imac.rules

View(inspect(imac.rules))

plot(imac.rules[1:5], method = "graph",

measure = "support", horiz= TRUE, shading = "lift",

interactive = FALSE, data = NULL, control = NULL)

plot(imac.rules[1:5], method = "graph",

measure = "lift", horiz= TRUE, shading = "support",

interactive = FALSE, data = NULL, control = NULL)

#find relations with HP Laptop and other items####

hplaptop.rules<- apriori(dataset, parameter = list(supp=0.01,conf= 0.02, minlen = 2),

appearance = list(lhs="HP Laptop" ))

hplaptop.rules

View(inspect(hplaptop.rules))

plot(hplaptop.rules[1:5], method = "graph",

measure = "support", horiz= TRUE, shading = "lift",

interactive = FALSE, data = NULL, control = NULL)

plot(hplaptop.rules, method = "graph",

measure = "lift", horiz= TRUE, shading = "support",

interactive = FALSE, data = NULL, control = NULL)

**#plot the findings####**

subRules<- rulesBylift[quality(rulesBylift)$lift > 1]

subRules

inspect(subRules)

plot(subRules)

subRules1<- rules[quality(rules)$confidence > 0.02]

subRules1

plot(subRules1[1:10])

plot(subRules1, method= "graph")

plot(subRules[1:5], method = "grouped",

measure = "support", horiz= TRUE, shading = "lift",

interactive = FALSE, data = NULL, control = NULL)

plot(subRules, method = "grouped",

measure = "lift", horiz= TRUE, shading = "support",

interactive = FALSE, data = NULL, control = list(col=rainbow(5)))

plot(subRules1[1:20], method = "grouped",

measure = "lift", horiz= TRUE, shading = "support",

interactive = FALSE, data = NULL, control = list(col=rainbow(5)))

plotly\_arules(SubRules)

plotly\_arules(imac.rules)