Associations Between Products

Executive Summary

In this project transactions data was obtained from a start-up named Electronidex. In the initial analysis items bought the most was discovered. The top 10 items most frequently bought is shown in Figure 1. As can be observed, iMac was the object most frequently bought. Next, items bought by themselves were isolated. The top 15 items bought by themselves are shown in Figure 2. Next arules library was used to discover the relationship between products. The best condition to filter rules was found to be a support of minimum 0.003, and a minimum confidence of 0.7. Consequently 23 rules were obtained. The support-confidence scatter plot is provided in Figure 3, and with labels in Figure 4. The parallel-coordinates plot for top 10 rules is further provided in Figure 5, and the complete list of 23 rules in Figure 6. From our previous analysis, we had found that our customers preferred Sony, and Acer to a lesser extent (Figure 7), which are two brands not offered by Electronidex. Further, previous analysis had found that our top sales category is Game Consoles (Figure 8), which are also not offered by Electronidex. However there does exist middle-of-the-range items that Electronidex offers that can lead customers to buy products, as discovered from association rules. Due to all these reasons, we recommend a cross-sale promotion with Electronidex, but not buying Electronidex.
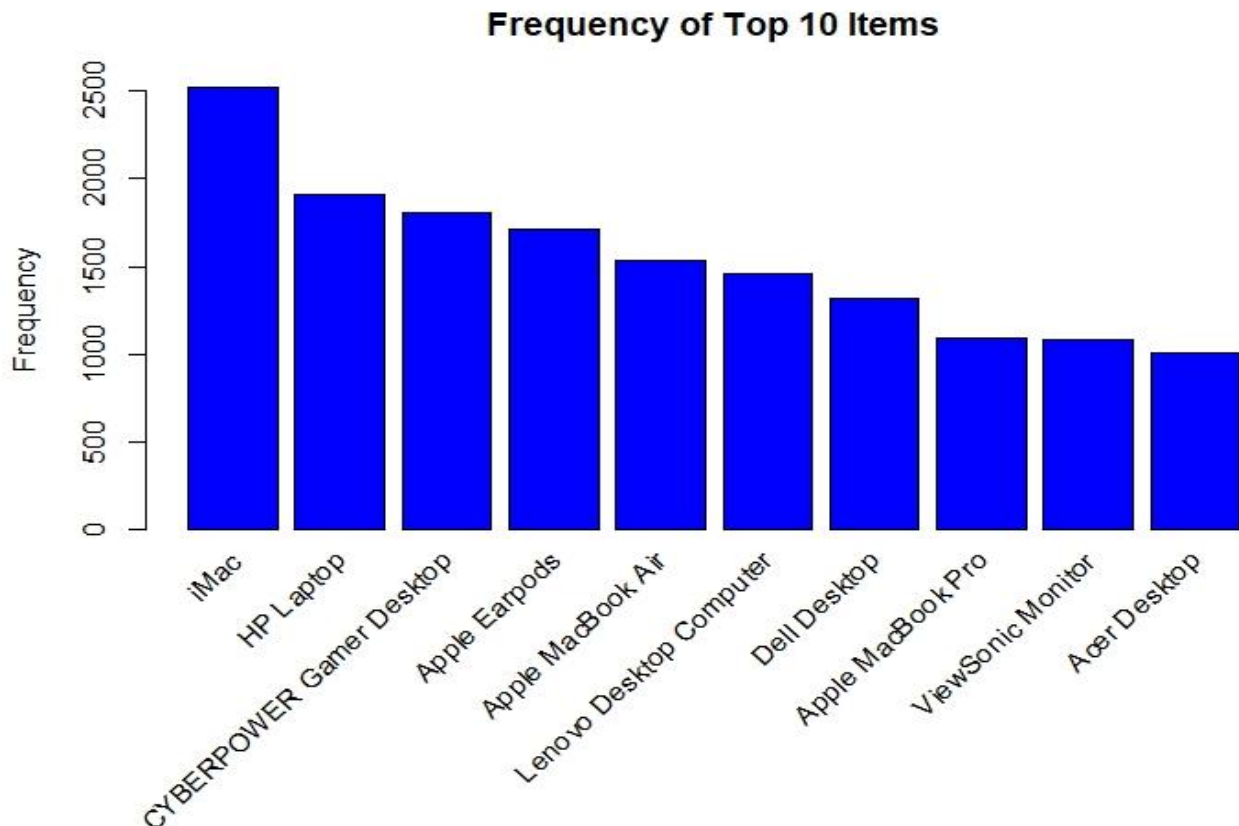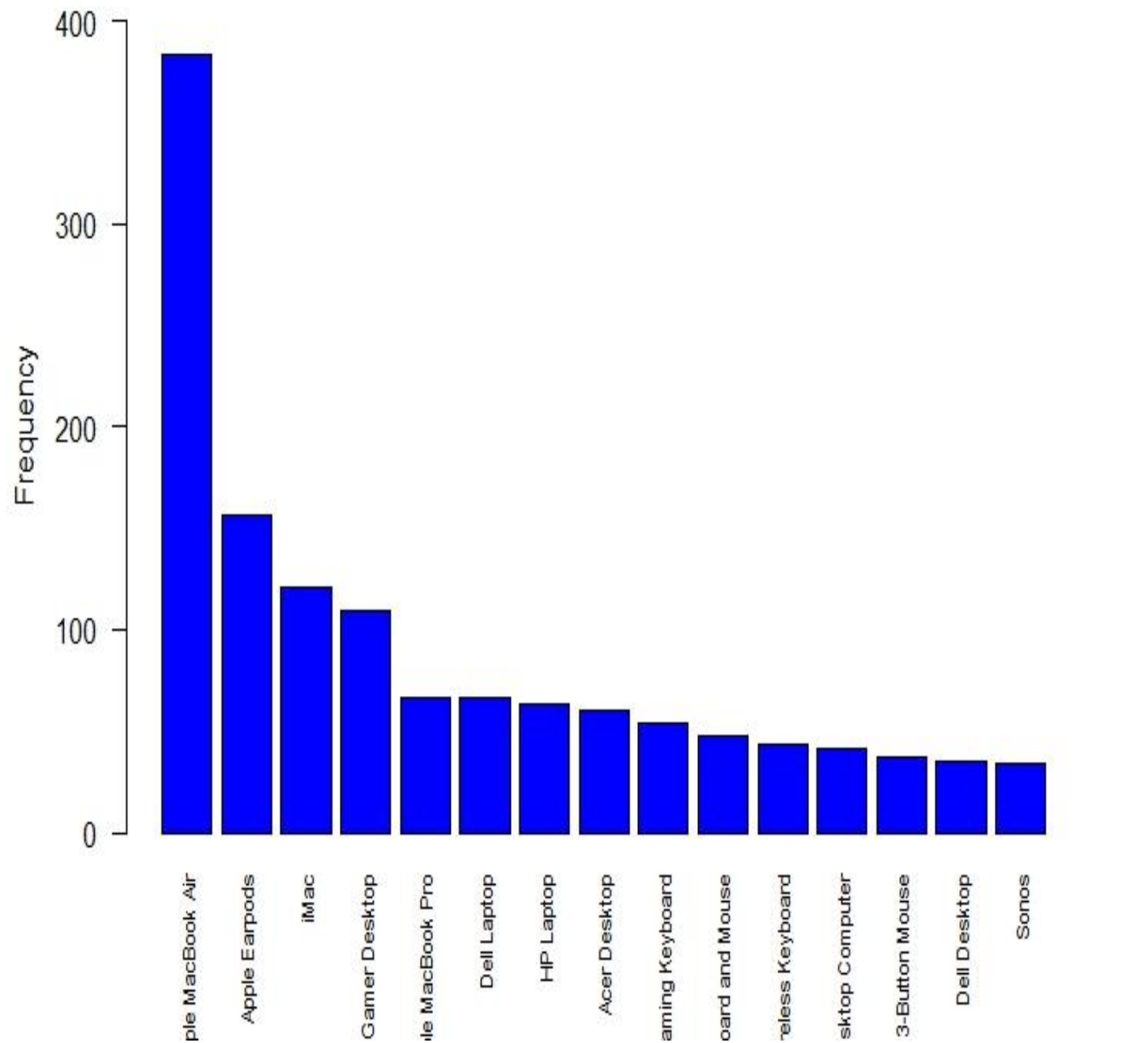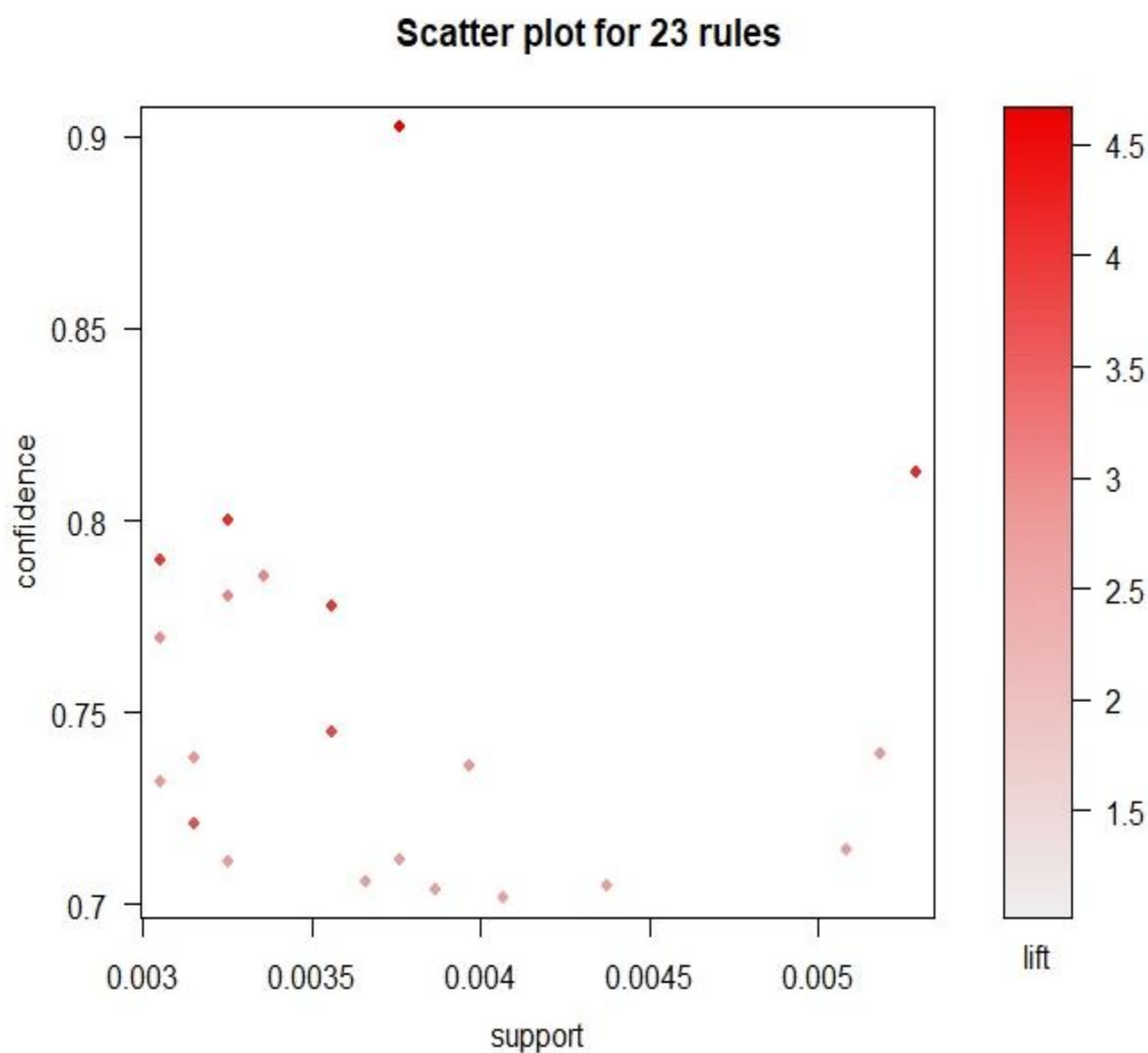

Figure 1

Top 15 Items Bought Alone

Figure 2

Figure 3

Graph for 23 rules

size: support (0.003 - 0.005)
color: lift (2.74 - 4.649)

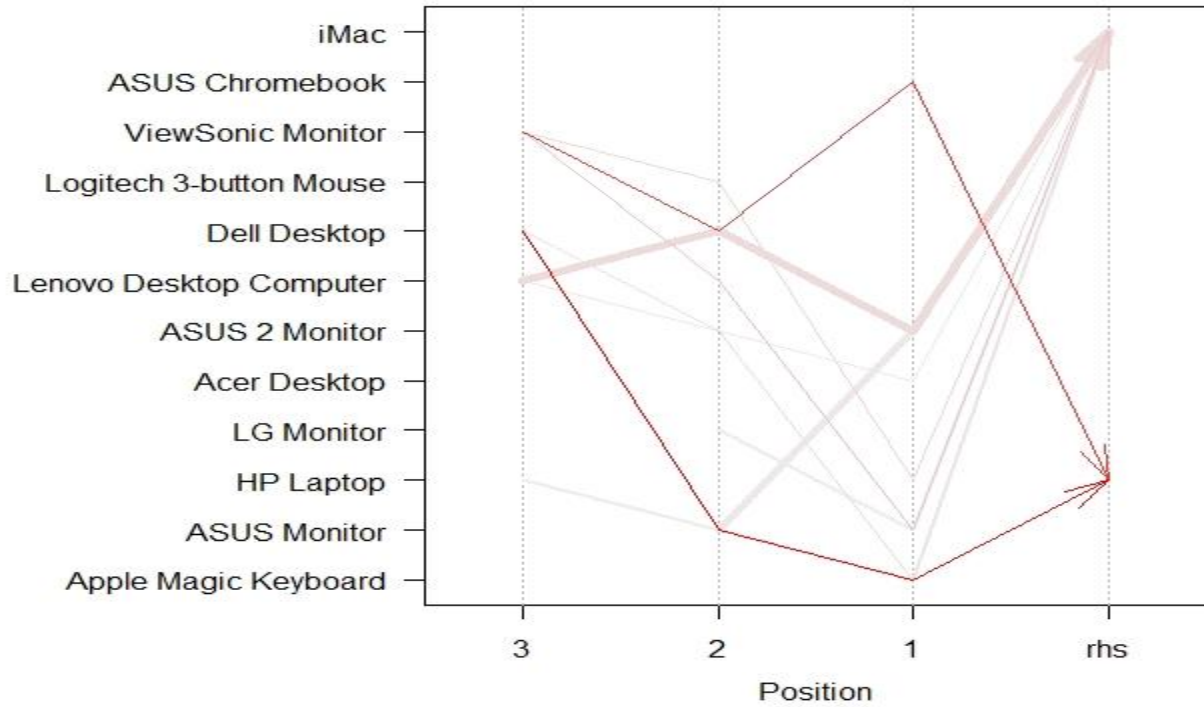Figure 4

Parallel coordinates plot for 10 rules

Figure 5

| Rules	Support	Confidence
{Acer Aspire,Dell Desktop,iMac,ViewSonic Monitor} => {HP Laptop}	0.004	0.902
{Acer Aspire,Dell Desktop,ViewSonic Monitor} => {HP Laptop}	0.005	0.813
{Acer Desktop,Dell Desktop,iMac,ViewSonic Monitor} => {HP Laptop}	0.003	0.800
{Apple Magic Keyboard,ASUS Monitor,Dell Desktop} => {HP Laptop}	0.003	0.789
{Dell Desktop,Microsoft Office Home and Student 2016,ViewSonic Monitor} => {iMac}	0.003	0.786
{Dell Desktop,Samsung Monitor,ViewSonic Monitor} => {iMac}	0.003	0.786
{ASUS Monitor,Lenovo Desktop Computer,ViewSonic Monitor} => {iMac}	0.003	0.780
{Dell Desktop,HP Monitor,ViewSonic Monitor} => {HP Laptop}	0.004	0.778
{Acer Aspire,Apple Magic Keyboard,Dell Desktop} => {iMac}	0.003	0.769
{ASUS Chromebook,Dell Desktop,ViewSonic Monitor} => {HP Laptop}	0.004	0.745
{ASUS 2 Monitor,Dell Desktop,Lenovo Desktop Computer} => {iMac}	0.005	0.739
{HP Laptop,Logitech 3-button Mouse,ViewSonic Monitor} => {iMac}	0.003	0.738
{ASUS Monitor,Dell Desktop,Lenovo Desktop Computer} => {iMac}	0.004	0.736
{Apple Magic Keyboard,ASUS 2 Monitor,Dell Desktop} => {iMac}	0.003	0.732
{Acer Aspire,Acer Desktop,ViewSonic Monitor} => {HP Laptop}	0.003	0.721
{ASUS 2 Monitor,ASUS Monitor} => {iMac}	0.005	0.714
{Acer Aspire,Dell Desktop,HP Laptop,ViewSonic Monitor} => {iMac}	0.004	0.712
{Acer Desktop,ASUS 2 Monitor,Lenovo Desktop Computer} => {iMac}	0.003	0.711
{Lenovo Desktop Computer,Microsoft Office Home and Student 2016,ViewSonic Monitor} => {iMac}	0.003	0.711
{Apple Magic Keyboard,HP Laptop,Microsoft Office Home and Student 2016} => {iMac}	0.004	0.706
{Dell Desktop,HP Laptop,Lenovo Desktop Computer,ViewSonic Monitor} => {iMac}	0.004	0.705
{ASUS Monitor,LG Monitor} => {iMac}	0.004	0.704
{Apple Magic Keyboard,ASUS Monitor,HP Laptop} => {iMac}	0.004	0.702

Figure 6

Frequency of Brand

0 = Acer, 1 = Sony
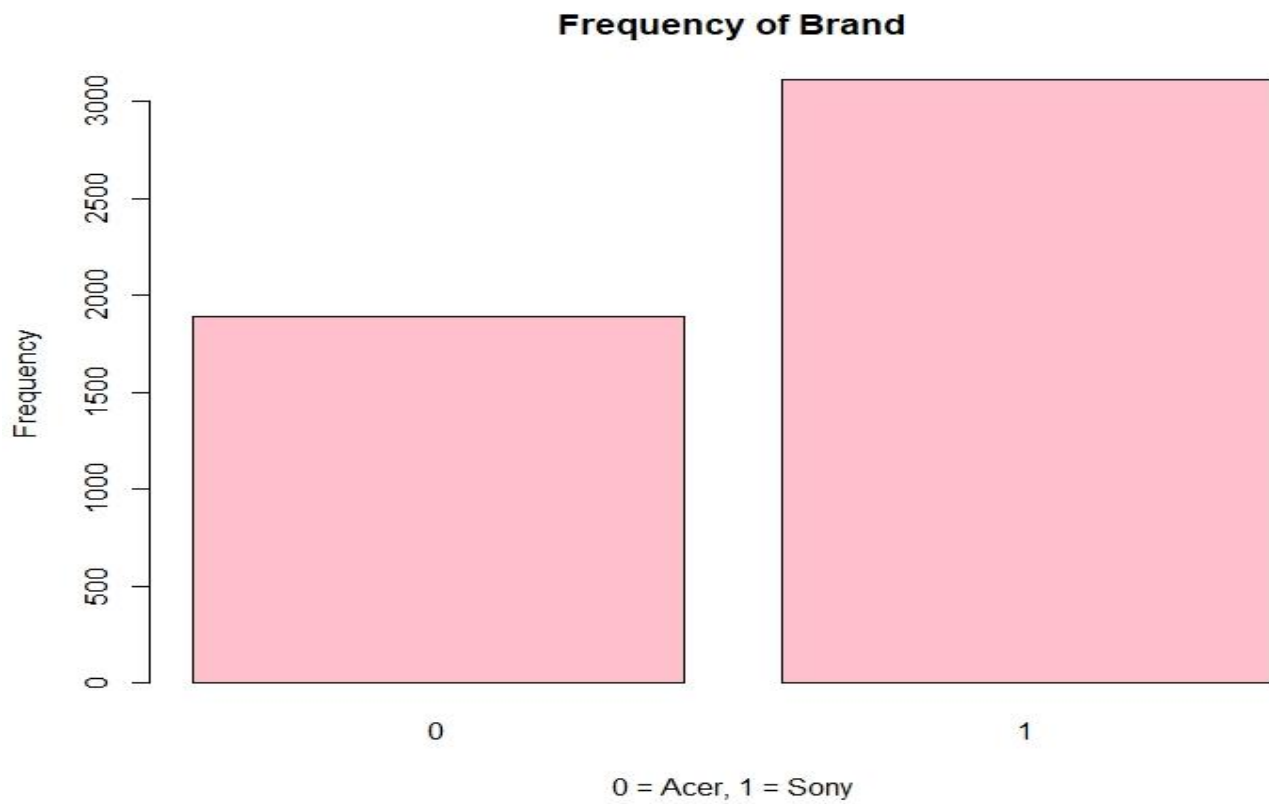
Figure 7

PRODUCT TYPE	PRODUCT ID	PROFIT
GameConsole	307	$188,540
Tablet	186	$121,572
Laptop	176	$99,556
GameConsole	199	$58,788
Tablet	187	$43,078

Figure 8