**Business Objective**

To maximize the sales of The Departmental Store by adopting the Association rules.

**Business constraints**

Availability of the correct data to make rules for various products, The Departmental Store should be open to adopting the new techniques and equally supported by the staff too.

**Data** **Dictionary** : groceries dataset consists of details of various products bought by customers in The Departmental Store.

**Inferences :**

On the basis of transactions data of The Departmental Store, we have come up with set of rules which will give better

business, these can be referred in the attached file ‘Groceries\_rules.csv’. Following are the top 3 rules’ interpretations:

First rule states that rolls/buns(antecedent) and chicken(Consequent) associate well, with a support of 0.009, illustrating rolls/buns are bought 9 times out of 1000 transactions. Confidence of 0.0525 depicting 5.25% of the transactions will have chicken too out of total transactions when rolls/buns are bought. Lift value in this rule is 1.22 suggesting chicken is bought 1.22 times more with rolls/buns as compared to default sale of chicken.

Second rule talks about butter(antecedent) and whole milk(Consequent), support of 0.0275 implying butter is bought 27 times out of 1000 transactions, confidence of 0.497 illustrates out of all the transactions with butter in 49.7% of transactions whole milk is bought and Lift of 1.94 shows whole milk is 1.94 times more likely to be bought with the butter as compared to likelihood of bought alone.

Third rule comes up with the itemset of butter and Pastry, with support of 0.0076, confidence of 0.1376 stating out of all the transactions containing butter 12.76% transactions will have pastry too. Lift here is 1.54 suggesting pastry is bought 1.54 times more with butter as compared when it is bought alone.

**Plot Interpretations**

When itemsets are plotted against support, whole milk shows highest support, representing it is most popular product.

Other vegetables, rolls/buns and soda comes at 2nd to 4th position, these are also bought frequently. When considering top 11 itemsets in this plot, shopping bag, sausage & pastry stand at 9th to 11th position.

**Conclusion**

Considering rules devised in the file Groceries\_rules.csv, The Departmental Store should workout their product placements, this will not only reduce a customer’s shopping time, but also reminds the customer of what relevant items they might be interested in buying and thus helping the cross-selling too.