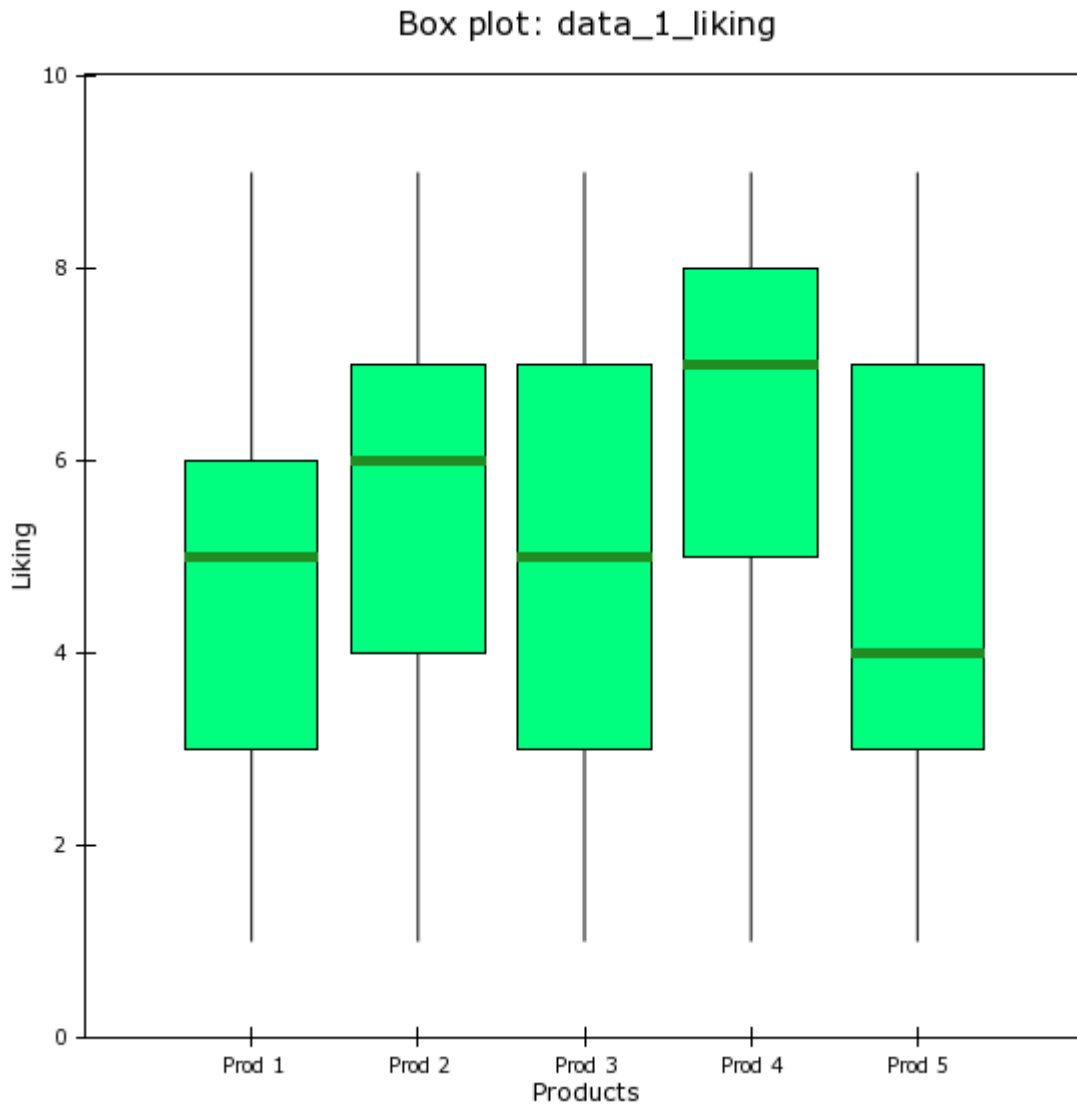


## Exercises for ConsumerCheck PCA, Preference Mapping

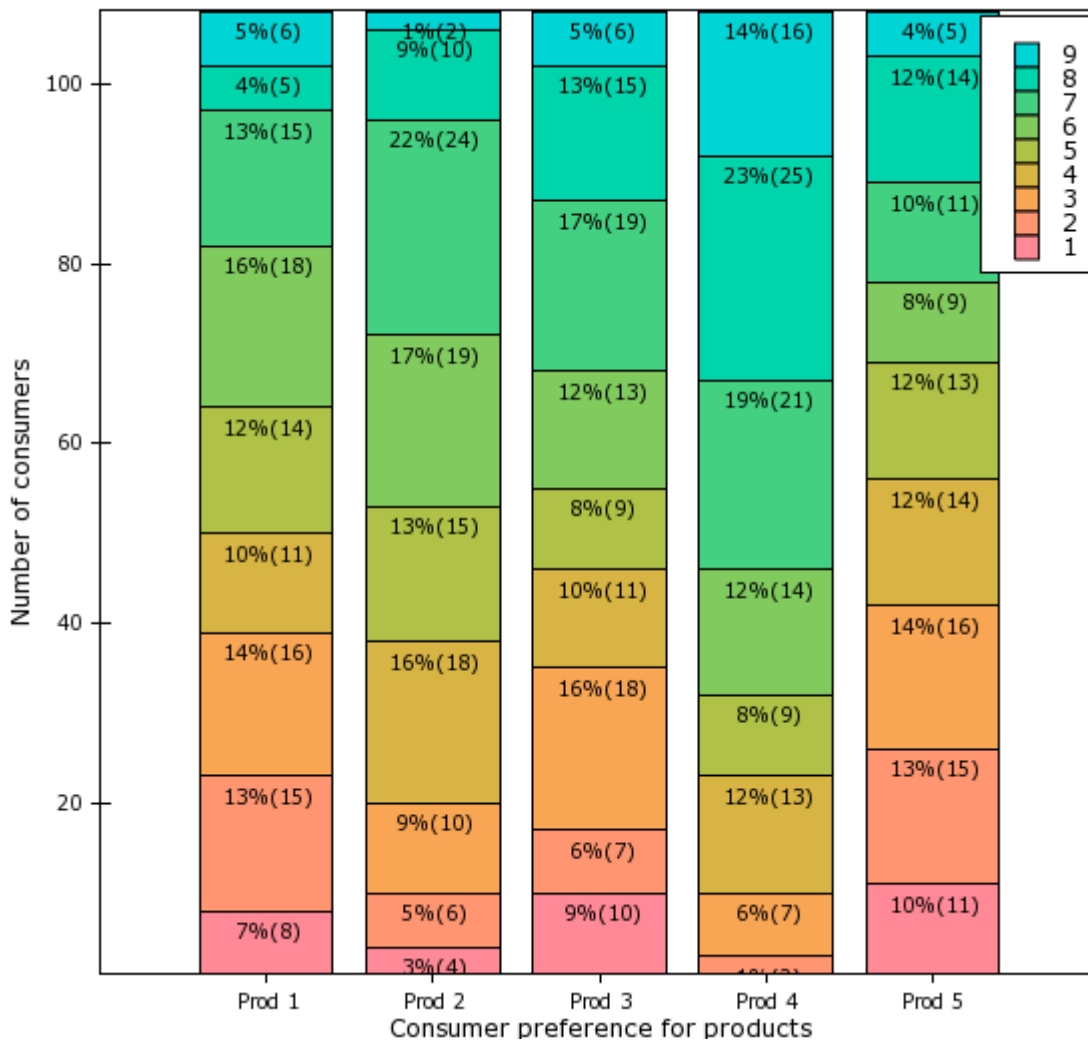
In the following Use your own data OR use the version of the **apple** data set

1. Make a short exploratory analysis using the *Basic Stat liking* tab. Which products are most liked?



The Box plot can be seen that Prod 4 is the most liked product whereas Prod 5 is less liked.

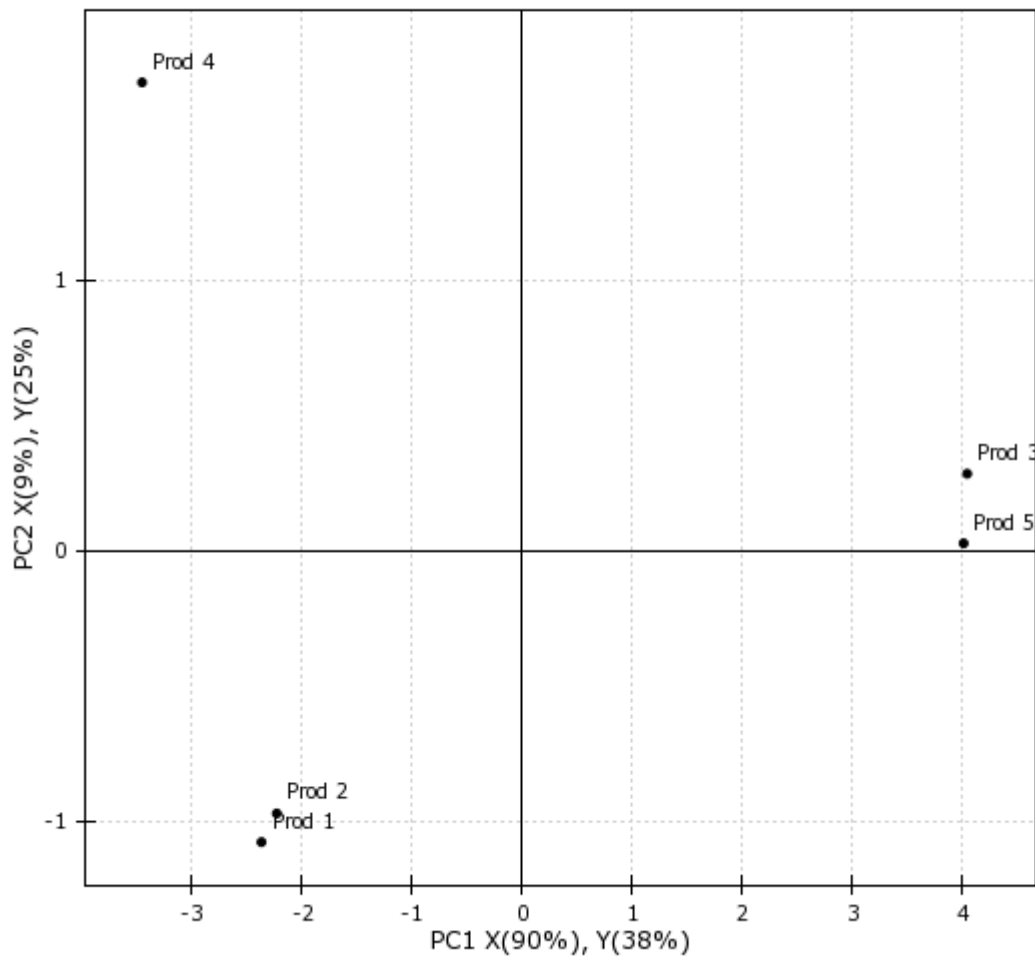
Stacked histogram: data\_1\_liking



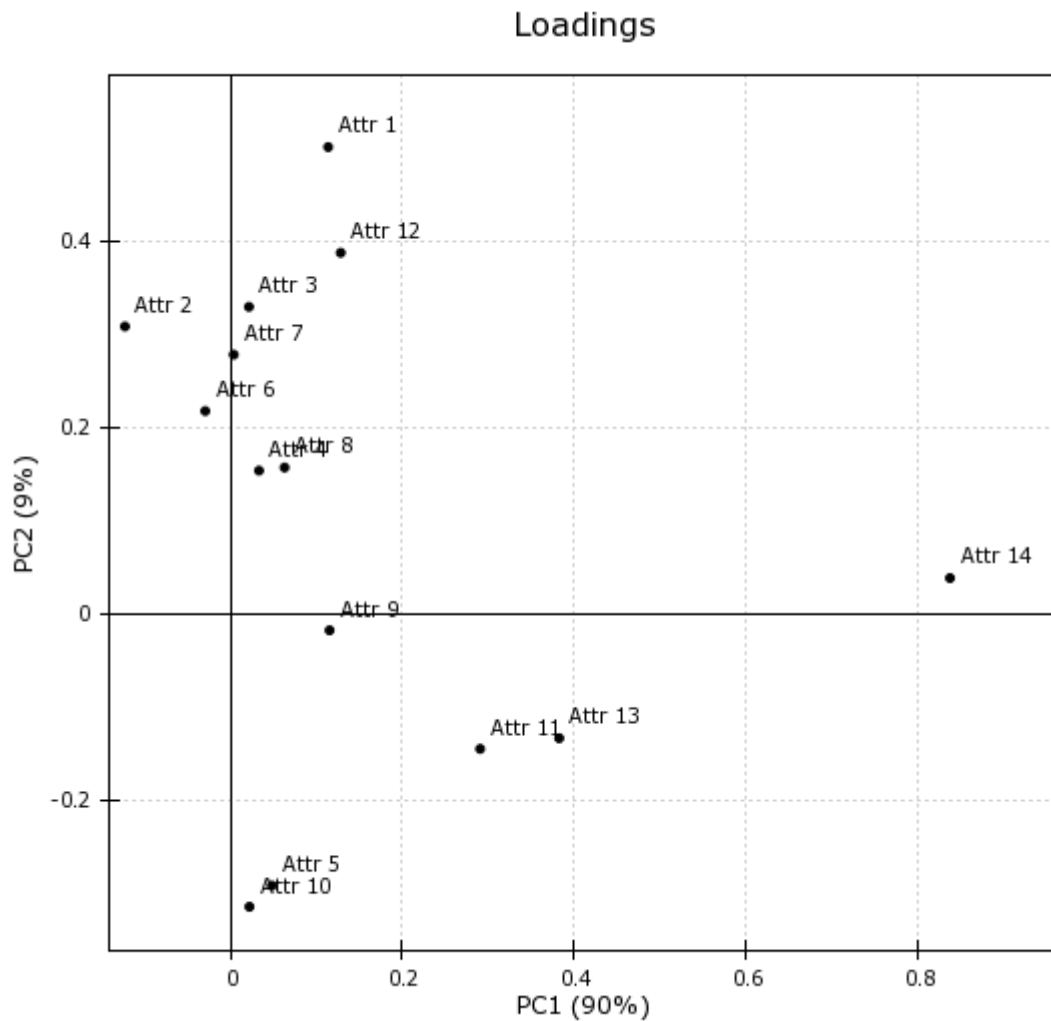
The stacked histogram confirms that product 4 is the most liked product – most of consumers put high scores to that product.

2. Replicate the example from the presentation/ ConsumerCheck paper (choose internal preference mapping with PLSR)
3. Make the external preference mapping (try different methods: PCR or PLSR). Does the choice of the methods change results?  
For External Preference mapping I first choose PCR (principal component regression).

### X scores

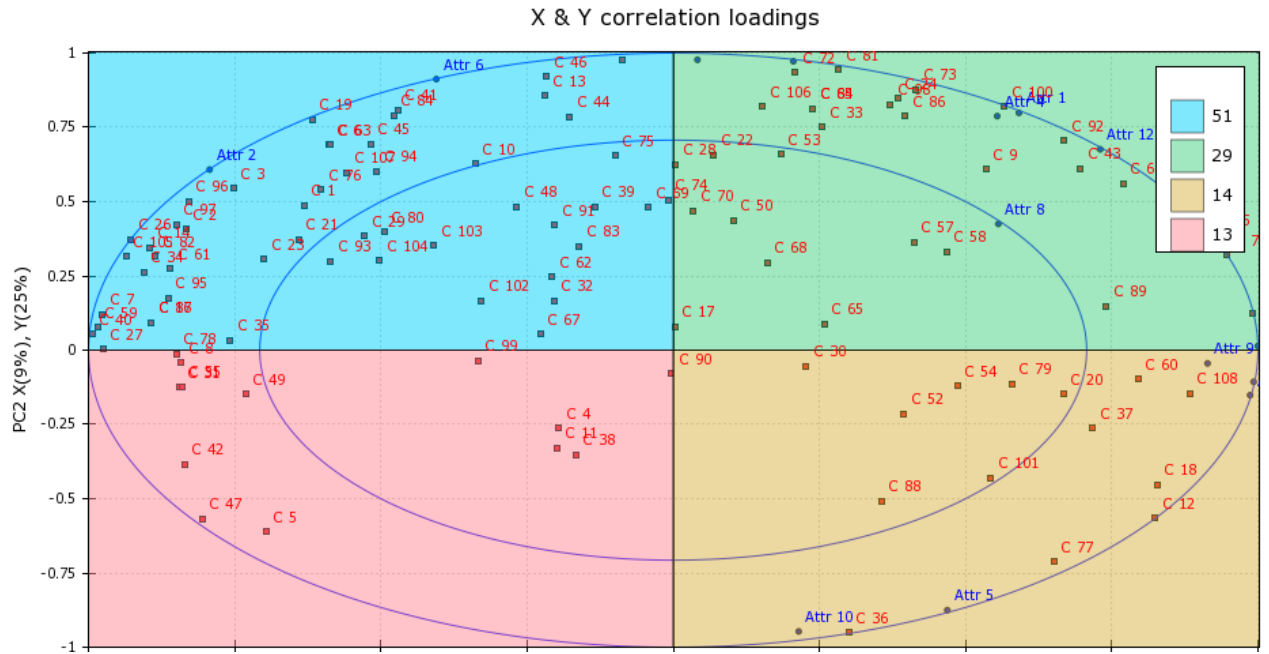


From the plot it can be observed that PC1 is mainly characterized by Prod 3 and Prod 5 versus Prod 2, Prod 1 and Prod 4. PC2 is characterized by Prod 4 versus Prod 2 and Prod 1 (but note that PC1 only accounts for 9 % of variation in the data).



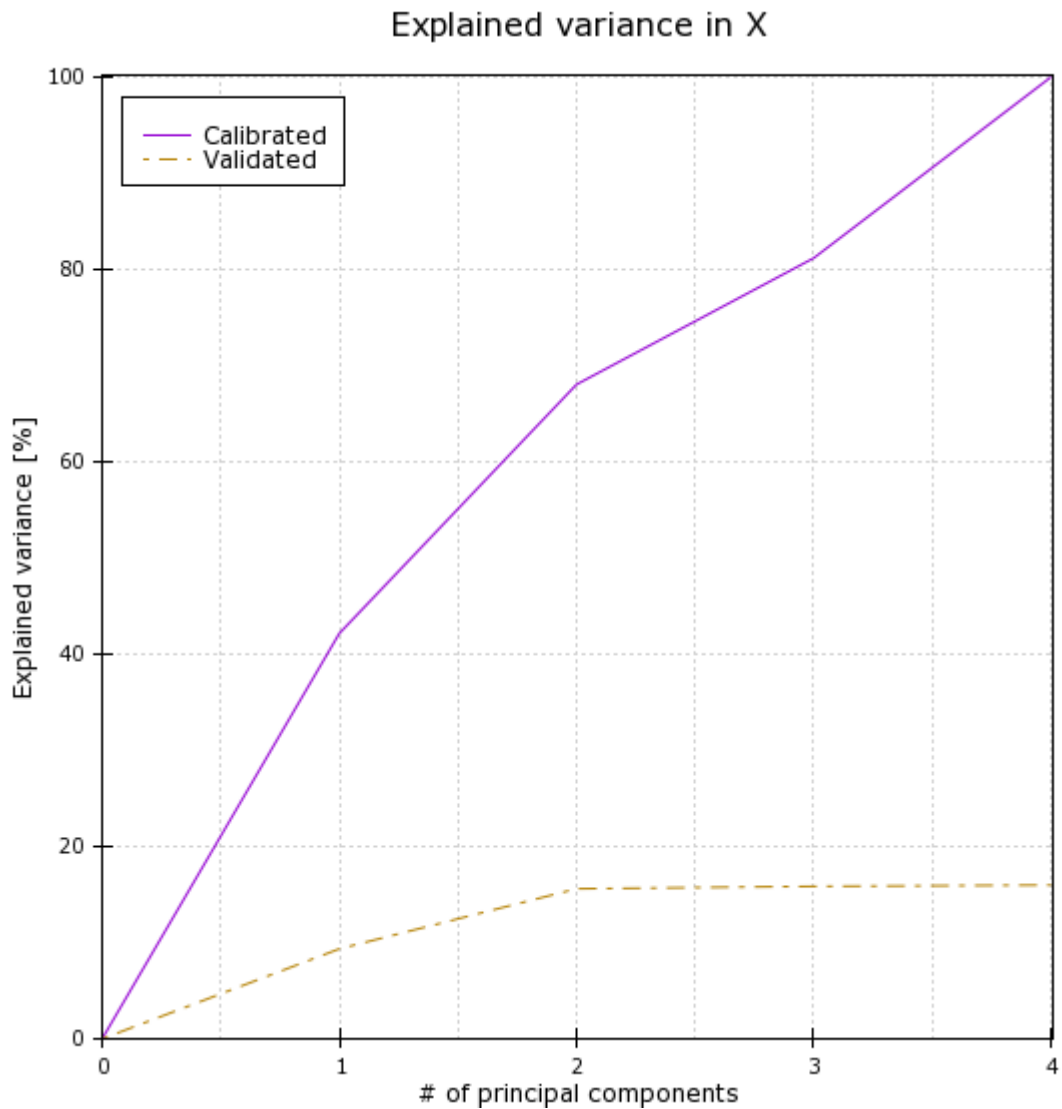
The PCA on the sensory profiling data shows that Prod 3 and 5 are characterized by the attribute 14. Products 1 and 2 by Attributes 5 and 10 . Prod 4 by attributes 2, 6 .

4. Draw the segmentation for the external preference mapping. Which attributes are the most liked by the consumers? How many consumers seem to like these attributes?



From External Preference mapping it can be seen that most of the Consumers prefer products in the upper left corner (51 consumers), the product is characterized by Attributes 2 and 6. The less liked are products on the lower left corner.

5. What can you say about explained variance of X and Y? Are consumer liking data much noisier than the sensory profiling data?



The explained variance of the consumer data is much noisier than the sensory data. 68 % are explained by the first two components. The validated variance also indicates that the PCA is not very robust.

- Detailed information on PCA, Preference mapping, PLSR can be found in Sections 3.2, 3.3, 3.4 and 6.4, 6.5, 6.6 of ConsumerCheck paper (**JSS\_CCpaper\_FIX.pdf**)