

## Chipotle K-Means Cluster Analysis

GSB 516

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### Variable Classification

Based on the data in the Chipotle survey, all variables fall into different categories such as outcome, segmentation (demographic, psychographic, behavioral), and marketing mix variable (product, price, place, promotion).

<i>Variables</i>	<i>Classification</i>
top1	Psychographic Segmentation (not used)
wom, sm, walk, billboard	Marketing Mix - Promotion
patronage	Outcome
importantconvenience, importantvariety, importantprice, importanthealthy, importanttaste, importantambience	Psychographic Segmentation
chipotleconvenience, chipotleambience	Marketing Mix - Place
chipotlevariety, chipotlehealthy, chipotletaste	Marketing Mix - Product
chipotleprice	Marketing Mix - Price
female, age, income	Demographic Segmentation
plan, spending, buylocal, healthyimportanttome	Psychographic Segmentation

### Choosing the Number of Clusters and Variables

By running K-Mean with psychographic variables, the number of clusters was divided into 3 groups. This number was chosen due to two reasons. First, when starting with 6 clusters, one cluster had a very small size - 11 people. Secondly, the 4 and 5 clusters showed at least one group was too similar to another group, which might not be optimal in marketing segmentation, resulting in 3 clusters as one of the best options. In practice, choosing a small number of clusters

is preferred given the constraints on the business budget for marketing campaigns. Fewer clusters mean fewer resources are needed to spend on different campaigns. By understanding Chipotle's business model, the variables are narrowed down to 'importanthealthy', 'healthyimportanttome', 'plan', 'importantvariety', 'importantambience', and 'importantprice'. These variables are the most relevant to understanding a customer's attitude toward Chipotle.

<i>Cluster</i>	<i>important healthy</i>	<i>healthy important to me</i>	<i>plan</i>	<i>important variety</i>	<i>important ambience</i>	<i>important price</i>
1	3.94	1.95	1.96	3.73	3.82	4.16
2	4.92	1.23	1.24	4.56	4.48	4.91
3	4.73	1.98	2.53	4.59	4.37	4.94

The three clusters are evenly spread with sizes of 103, 124, and 86.<sup>1</sup> Each cluster has enough customers for marketers to target.

### Means Analysis

<i>Cluster</i>	<i>Mean Age</i>	<i>Mean Income</i>	<i>Mean % Female</i>	<i>Mean Patronage</i>
1	43	\$46,095.19	24%	0.60
2	37	\$39,246.06	12%	0.31
3	42	\$37,877.83	31%	0.30

Cluster 1: Older adults who are 24% female visit Chipotle often with the highest income.

Cluster 2: Youngest men who sometimes visit Chipotle and with middle income.

Cluster 3: Middle-aged women who sometimes visit Chipotle with the lowest income.

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<sup>1</sup> This result was produced with "set.seed(500)" and in R version 4.1.2 (or later).

## Recommendations

After running a Mean Analysis, groups 2 and 3 share a similar mean of patronage – 0.31 and 0.30 while group 1 has the highest – 0.60. There are two potential marketing strategies for Chipotle to consider. Chipotle can either target groups 2 and 3 in a gender-and-income-neutral marketing campaign to obtain new customers or target group 1 to retain them since they have the highest patronage level. Based on the 6 variables selected for the cluster analysis, the means of each variable are similar overall, indicating all groups are more alike than not. Thus, Chipotle should focus on groups 2 and 3 due to their low levels of patronage, meaning they come sometimes. To increase this level of patronage, Chipotle should put more resources into attracting these two groups. Meanwhile, Chipotle should spend the same amount on maintaining the quality of experience for customers in group 1.

## Marketing Mix Analysis

### Product:

<i>Cluster</i>	<i>Mean Healthy</i>	<i>Mean Taste</i>	<i>Mean Variety</i>
1	4.36 - Good	4.35 - Good	3.54 - Neutral/Good
2	4.54 - Very Good	4.42 - Good	4.06 - Good
3	4.47 - Very Good	4.31 - Good	3.80 - Neutral/Good

### Price:

<i>Cluster</i>	<i>Mean Price</i>
1	3.26 - Neutral
2	3.76 - Neutral/Good
3	3.70 - Neutral/Good

**Place:**

<i>Cluster</i>	<i>Mean Convenience</i>	<i>Mean Ambience</i>
1	3.52 - Neutral/Good	3.47 - Neutral/Good
2	3.98 - Neutral/Good	3.94 - Neutral/Good
3	3.85 - Neutral/Good	3.87 - Neutral/Good

**Promotion:**

<i>Cluster</i>	<i>%Word of Mouth</i>	<i>%Walking By</i>	<i>%Social Media</i>	<i>%Billboard</i>
1	52.4%	38.8%	9.7%	0.0%
2	62.9%	25.0%	7.3%	1.6%
3	53.5%	38.4%	5.8%	2.3%

While the product variety has some room to improve, the result of Chipotle's marketing mix demonstration was quite successful. Most of the customers like Chipotle's taste and healthy options. Although groups 2 and 3 have a similar level of patronage, it's better for Chipotle to only focus on group 2 in order to lower the marketing costs. With an average score of 4, the product and place strategies were already sufficient for group 2. Since this group has a middle income, as long as the price is reasonable, the price strategy could remain effective. Customers from group 2 are mostly attracted by word of mouth; therefore, the next strategy can be carried out by designing creative campaigns easily spread to friends and family. For instance, promoting seasonal local flavor options with digital coupons that can be gifted to others will stimulate customers' motivation to purchase. As a result, it is recommended that Chipotle operate an advanced marketing mix to boost their potential customer attraction in group 2 by running the aforementioned creative campaigns to elevate the percentage of patronage, increasing the profitability of the business.

## Appendix

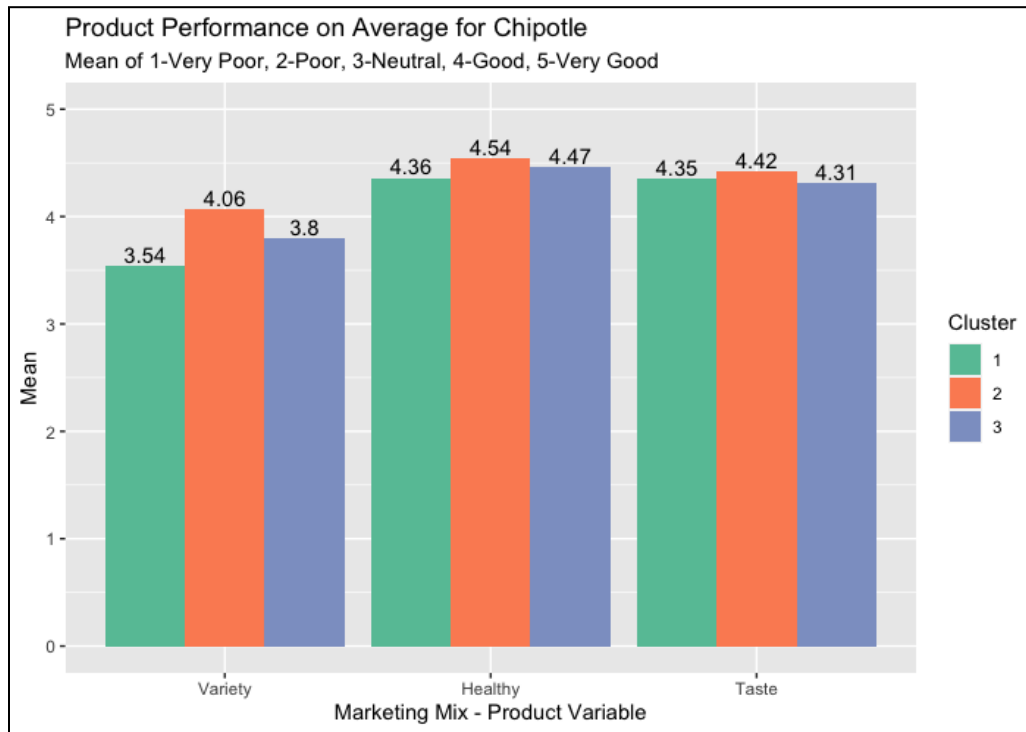


Figure 1: Marketing Mix - Product

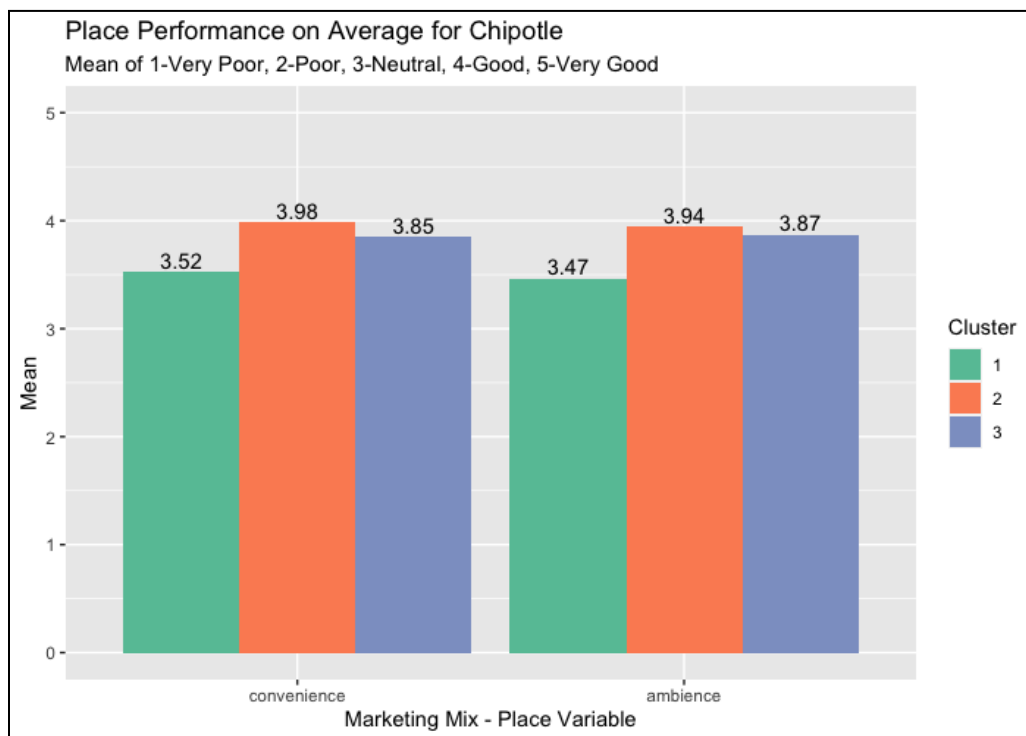


Figure 2: Marketing Mix - Place

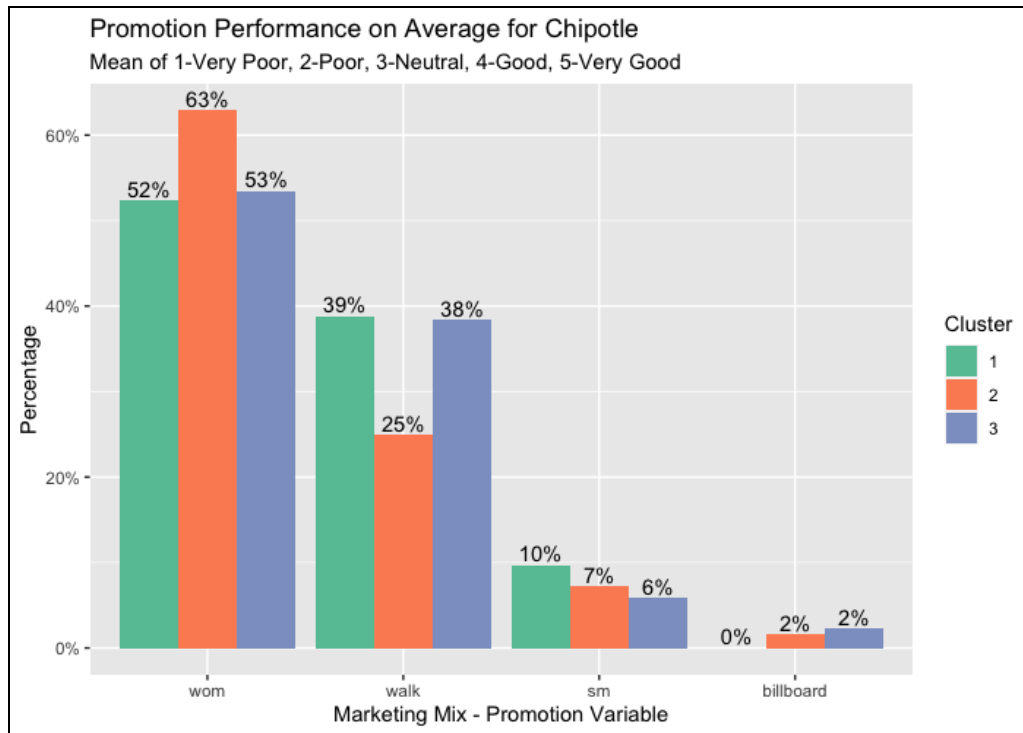


Figure 3: Marketing Mix - Promotion

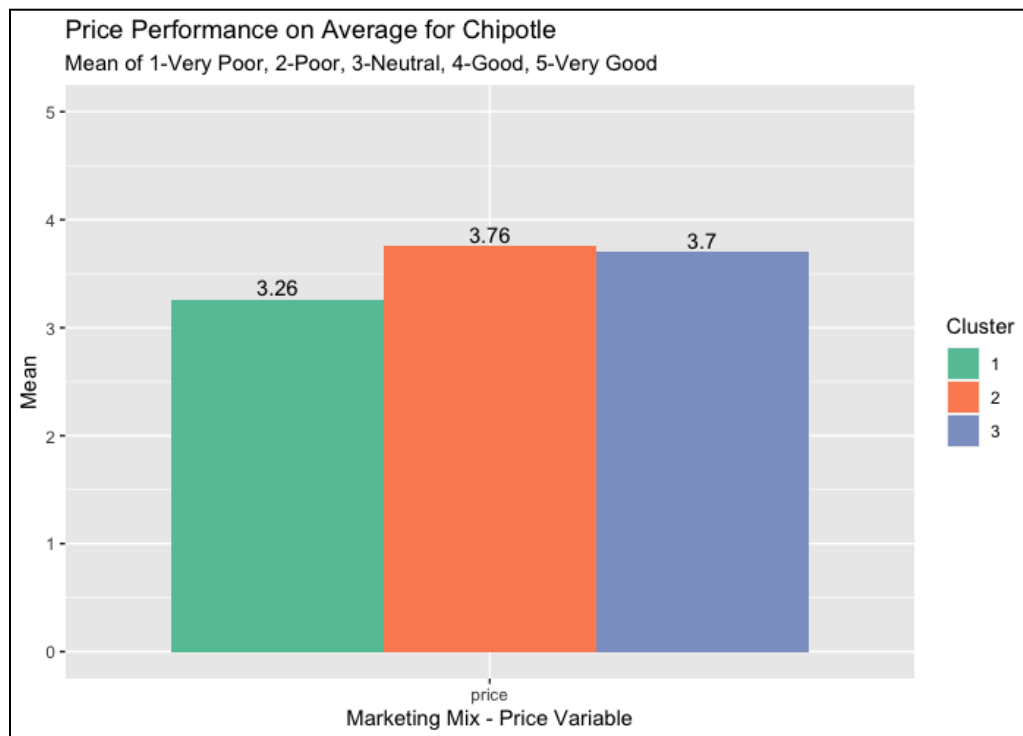


Figure 4: Marketing Mix - Price