**Marketing 530 Assignment Five:**

Factor Analysis of Survey Data for National Grocers Association

*November 2024*



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National Grocers Association

Attn: Head of Marketing Research

601 Pennsylvania Ave, NW

Suite 375N

Washington D.C. 20004

*By email: admin@nationalgrocers.org*

Dear National Grocery Association Head of Marketing Research,

We are pleased to submit our report, Factor Analysis of Survey Data for National Grocers Association, prepared using data from the National Grocers Association’s Food Shopping Survey and Food Loyalty Survey Data. This report provides an in-depth analysis of consumer response on grocery shopping experiences, evaluating key factors such as shopping habits, overall store satisfaction, store attributes, perceived benefits, loyalty, and consumer demographics to help food retailers understand what is important to their customers.

The findings and recommendations are based on a dataset of 790 survey respondents. This data-driven approach ensures that our analysis aligns with real-world responses and delivers actionable insights for strategic planning.

This report is designed for National Grocer’s internal review. We recommend that it not be shared outside your organization without express permission.

Please do not hesitate to call or email if we can be of any further assistance to you or if questions arise concerning this letter or the underlying research report analysis.

Sincerely,

Audrey Burch and Steven Wazlavek

*By email: aueburch3@crimson.ua.edu or smwazlavek@crimson.ua.edu*

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1. **Part 1**
2. We are going to build two separate regression models. You should start by running 2 linear regressions (ANALYZE, REGRESSION, LINEAR) with your new dependent variables (COMMITMENT1 and FANATICISM1) - remember dependent - (what each store doesn’t control but is trying to build in its customers) and the new independent variables (things that each store has under its control to influence loyalty with). Put them all into the equation as independent variables. Keep the independent variables and change the dependent variable.
   1. Create two linear regression models:
      1. Dependent Variable 1: COMMITMENT1 (exclude FANATICISM1 as an independent)
      2. Dependent Variable 2: FANATICISM1 (exclude COMMITMENT1 as an independent)

* Independent Variables: All available surrogate variables (\*\_1 variables).

1. Interpret the results of those models.
   1. What drives customer fanaticism and what appears not to?
   2. Managerially, where would you put your investment money if you were a supermarket chain
   3. to get the best bang for the buck?
2. Write up your findings in a nice summary with a set of recommendations.
3. **Part 2**
4. Use Cluster Analysis to create 5 clusters on the COMMITMENT1
   1. COMMITMENT1 Analyze
   2. COMMITMENT1 Classify
   3. COMMITMENT1 TwoStep Cluster
5. Use Cluster Analysis to create 5 clusters on FANATICISM1
   1. FANATICISM1 Analyze
   2. FANATICISM1 Classify
   3. FANATICISM1 TwoStep Cluster
6. Explore the survey data using COMPARE MEANS. (Make sure the clusters are ranked from worst to best.)
   1. Think creatively and look at all kinds of :
      1. COMMITMENT1
         1. Behaviors
         2. Demographics
         3. Attitudes
      2. FANATICISM1
   2. Look at how things differ across store types and stores.
7. Write a summary of what the NGA should know about **commitment** (and behaviors) in the supermarket industry.
   1. Do commitment actually drive shopping behaviors or is behavior separate from feelings?
   2. Find the most interesting things that you can use to tell the executives at the NGA about.
   3. Write up the results of your explorations.
8. Write a summary of what the NGA should know about fanaticism (and behaviors) in the supermarket industry.
   1. Do fanaticism actually drive shopping behaviors or is behavior separate from feelings?
   2. Find the most interesting things that you can use to tell the executives at the NGA about.
   3. Write up the results of your explorations.
9. Make sure you write up a short paragraph of caveats.
10. What population is the survey results generalizable to?
11. What should the NGA realize about the data before they make strategy recommendations?
12. Other warnings?

**Figure 1-4:**

**Behavioral Questions:**

**Descriptive Statistics**

**Figure 1-5:**

**Behavioral Questions:**

**Descriptive Statistics**

**Table 1-1:**

**Behavioral Questions:**

**Descriptive Statistics**

**Table 1-2:**

**Behavioral Questions:**

**Descriptive Statistics**

**Table 1-3:**

**Behavioral Questions:**

**Descriptive Statistics**

**Table 1-4:**

**Behavioral Questions:**

**Descriptive Statistics**

**Table 1-5:**

**Behavioral Questions:**

**Descriptive Statistics**

**Figure 1-2:**

**Behavioral Questions:**

**Descriptive Statistics**

**Figure 1-3:**

**Behavioral Questions:**

**Descriptive Statistics**

**Figure 1-4:**

**Behavioral Questions:**

**Descriptive Statistics**

**Figure 1-5:**

**Behavioral Questions:**

**Descriptive Statistics**

 **Credentials**:  
You must supply your own credentials for:

* Reddit: CLIENT\_ID, CLIENT\_SECRET, USER\_AGENT
* Twitter: TWITTER\_BEARER\_TOKEN
* YouTube: YOUTUBE\_API\_KEY
* Amazon Product Advertising API: AMAZON\_ACCESS\_KEY, AMAZON\_SECRET\_KEY, AMAZON\_ASSOCIATE\_TAG

Without these, the script won’t be able to access these platforms.

 **Data Sources**:

* Google Trends: No credentials required, but rate limits apply.
* Reddit: Requires personal use script credentials.
* Twitter: Requires developer account and bearer token.
* YouTube: Requires a YouTube Data API key.
* Amazon: Requires credentials from Amazon Product Advertising API.
* External CSV data: Must be placed in the specified output directory beforehand.
* # Amazon Product Advertising API Credentials
* AMAZON\_ACCESS\_KEY = "your-access-key" # Replace with your actual Access Key
* AMAZON\_SECRET\_KEY = "your-secret-key" # Replace with your actual Secret Key
* AMAZON\_ASSOCIATE\_TAG = "pedipro-20" # Replace with your actual Associate Tag

**Wikipedia / Wikimedia APIs**

* **Data**: Completely free, no API key required. You can access articles, categories, and links.
* **How to Access**:
  + Use the public API endpoints, for example:  
    <https://en.wikipedia.org/w/api.php?action=query&list=search&srsearch=manicure&format=json>

**Public and Government Open Data Portals**

* **Data**: 100% free and open. Large databases of demographics, economic indicators, and sometimes small business or consumer survey data.
* **How to Access**:
  + **Data.gov (US)**: No key needed for many datasets. APIs are often open. Just download or query directly from <https://data.gov/>.
  + **European Data Portal or Other Country Portals**: Similar approach. Many APIs are open by default.
* **Use Cases**:
  + Understand market size, consumer spending habits, small business counts in the salon industry, demographic correlates of salon density.

**Credentials:**

* **Reddit Credentials:**
  + REDDIT\_CLIENT\_ID = "JQI8S3mbi5EHvZCUtyq\_tLQ"
  + REDDIT\_CLIENT\_SECRET = "KI8QRmoJUZtAOPmQTnxztHiY8bJeSg"
  + REDDIT\_USER\_AGENT = "PediproApp/1.0"
* **YouTube Credentials:**
  + YOUTUBE\_API\_KEY = "AIzaSyD7SwzStMs\_Job95bLl8c5G6IAYWUmBd10"
* **NewsAPI Credentials:**
  + NEWS\_API\_KEY = "7c032cdf5e0f4045966f1ed40ff47d8a"
* **Google Programmable Search Engine API Credentials:**
  + GOOGLE\_SEARCH\_API\_KEY = "AIzaSyD7SwzStMs\_Job95bLl8c5G6IAYWUmBd10"
  + GOOGLE\_SEARCH\_ENGINE\_ID = "a0f3ff8dee296466b"
* **Yelp Credentials:**
  + YELP\_API\_KEY = "CUmxP8aJu\_sU\_ge5IBM6nBqOKo3u\_JFPCntbWVx4dLj22Kl\_AW57OQu3HYczNY20Ytwv2NB\_Up0-GC2454rthRv4rX6yoIZfJUMGc1XkxWXZrxuH6Kt4LegVmZ3Yx"
* **Stack Exchange Credentials:**
  + STACKEXCHANGE\_CLIENT\_ID = "30445"
  + STACKEXCHANGE\_CLIENT\_SECRET = "zBR48JQG93jGGg2pT5NOg(("
  + STACKEXCHANGE\_KEY = "rl\_vkBp2zjpBjHfw5W5r4euiveS"
* **ngrok Credentials:**
  + NGROK\_AUTHTOKEN = "2qVTNHqFkTxL3lHy2k5JMDDmizV\_9TCMxjyRWpa3zZjqwKV3"
* **GPT Key:**
  + OPENAI\_API\_KEY = "sk-proj-7mrZSh-GcA2xxidja9xXIcbWOzoioDlJvfCC9Qx5MmCvIc5CjOmA57ARBigKZT4sy-3jizDpG9T3BlbkFJepTWk0TamwAex\_zx4HB7mzSGILhBQhbHGEVCuST\_lCAI3hZ4p9cQvO2Hmz-K8lLxtuo9PlOz0A"
* I have a wealth or resources to give you. This report will be well over 100 pages with appropiate charts and tables. we will have to break this down I I feed you information in batches. What size batches can you handle at a time? You tell me a prioritized list of what you want me to start uploading to complete our objective.