**Ecommerce Market Research Proposal**

**What is the Problem You Are Attempting to Solve?**

With the internet becoming increasingly involved in the average person’s daily life, many companies have taken to ecommerce, which is the electronic sale of goods through the internet. For an entrepreneur to break into the ecommerce market or for a large company to add their sources of revenue, a niche market must be found.

For the sake of clarity in this project, a niche market will be defined using this Wikipedia description:

A niche market is the subset of the market on which a specific product is focused. The market niche defines as the product features aimed at satisfying specific market needs, as well as the price range, production quality, and the demographics that is intended to impact.

The niche market is highly specialized, and aiming to survive among the competition from numerous super companies. Even established companies create products for different niches, for example, Hewlett-Packard has all-in-one machines for printing, scanning, and faxing targeted for the home office niche while at the same time having separate machines with one of these functions for big businesses.

With this definition in mind, the problem will be defined as, “With competition saturating the ecommerce market, what is the best niche market for a business or entrepreneur to expand into?”

To narrow the scope of this project, the focus will be on electronics appliances.

**How is Your Solution Valuable?**

The result of this project will be a solution that exceeds the performance of other niche market research tools in terms of finding the ideal niche market in a given sector. The ideal niche market is one that has some or all of the following criteria:

* high search volume
* products that are difficult for consumers to find locally
* solves a common problem
* has a customer base that is passionate
* is not overrun with websites that have a Google PageRank of five or higher
* has accessible suppliers.
  + Google PageRank is explained in the Appendix

The solution will drastically reduce the number of hours and amount of wages spent for market research and will be a valuable tool for anyone in ecommerce, from large companies to individual entrepreneurs.

**What is Your Data Source and How Will You Access It?**

*Links to sources in Appendix, Access explained in Techniques Section Below*

Data for Machine Learning Models - Facebook and Twitter APIs

Competition Research - PageRank Status for Chrome

Validation - Google Trends

**What Techniques From the Course Do You Anticipate Using?**

The project will begin with a broad search of keywords related to technology appliances on Keyword Planner (see appendix for description). For example, a keyword search was conducted for "Consumer Electronics Appliances" that returned seven hundred keywords with information on their average monthly searches and their level of competition (Low, Medium, or High). This information will be downloaded and filtered to generate a list of keywords that have a high number of average monthly searches and a low rank of competition. Keyword Planner measures competition by evaluating the number of advertisers that showed on each keyword relative to all keywords across Google.

Twitter and Facebook will then be scraped to gather posts that reference the products in the keyword list. With this data, an Unsupervised Neural Network will perform Natural Language Processing to generate sentiment analysis of the products.

The combined data from all techniques will be used as the features for a Supervised Neural Network that will predict the rise in popularity of a product over a six month period.

The predictions will be evaluated against the rise in popularity of the product(s) via Google Trends results.

**What Do You Anticipate Will Be the Biggest Challenge You Will Face?**

Competition - This will require some research into how saturated the market is for a given product. The competition will be evaluated by using the Google PageRank Status Keyword Planner.

Seasonality - Consumer electronics show some of the strongest seasonal trends. According to Investopedia, for example, over 40% of all battery sales are made during the Christmas shopping season. Seasonality techniques from Thinkful’s Time Series section will be utilized to capture the seasonality trends.

**Appendix**

**Google PageRank Description** (from Google Technology page):

PageRank Explained

PageRank relies on the uniquely democratic nature of the web by using its vast link structure as an indicator of an individual page’s value. In essence, Google interprets a link from page A to page B as a vote, by page A, for page B. But, Google looks at considerably more than the sheer volume of votes, or links a page receives;**for example**, it also analyzes the page that casts the vote. Votes cast by pages that are themselves “important” weigh more heavily and help to make other pages “important.” **Using these and other factors, Google provides its views on pages’ relative importance.**

Of course, important pages mean nothing to you if they don’t match your query. So, Google combines PageRank with sophisticated text-matching techniques to find pages that are both important and relevant to your search. Google goes far beyond the number of times a term appears on a page and examines **all** dozens of aspects of the page’s content (and the content of the pages linking to it) to determine if it’s a good match for your query.

**Keyword Planner Description** (from Google Adwords page):

Keyword Planner is a free AdWords tool for new or experienced advertisers that’s like a workshop for building new [Search Network](https://support.google.com/adwords/answer/90956) campaigns or expanding existing ones. You can search for keyword and ad group ideas, see how a list of keywords might perform, and even create a new keyword list by multiplying several lists of keywords together. Keyword Planner can also help you choose competitive bids and budgets to use with your campaigns.

##### Sources:

*Facebook:*[*http://graph.facebook.com*](http://graph.facebook.com/)

*Google Trends:*[*https://developers.google.com/gdata/docs/directory*](https://developers.google.com/gdata/docs/directory)

*Google News:*[*https://newsapi.org/s/google-news-api*](https://newsapi.org/s/google-news-api)

*Keyword Planner:*[*https://adwords.google.com/ko/KeywordPlanner/Home?sourceid=awo&\_\_u=3050284228&\_\_c=9347440984&authuser=0#search*](https://adwords.google.com/ko/KeywordPlanner/Home?sourceid=awo&__u=3050284228&__c=9347440984&authuser=0#search)

*Twitter:*[*https://developer.twitter.com/en/docs/basics/getting-started*](https://developer.twitter.com/en/docs/basics/getting-started)