Data selection and your project proposal are due this week. (Sales Data) While you might decide to add additional data sources as the project progresses, you should have a good idea of your initial dataset by this milestone.

Project Proposal

The dataset we selected shows product data over the course of one year.

* Problem statement

This data is from a retail company that sells a variety of electronic products in the United States. Products include small ticket items such as batteries, as well more expensive products, such as MacBooks. Growth in the electronics sector is primarily driven by innovation and accelerated by consumer spending on a global level (Beers 2022). This growth has induced market entry by new retailers. The rise of online shopping has also fragmented the market and created a highly competitive market (Beers 2022).

* Explain why the problem is important/interesting

The history of sales and consumer information collected by this company provide the opportunity to analyze the sales of specific product categories in the electronics market. Furthermore, this dataset includes information about product cost that can be used to find profit margin. This enables us to determine not only which products bring in the most revenue, but also which products are the most profitable.

* Who would be interested in solving this problem, i.e., who would you be trying to sell this project to?

This analysis would be most useful to stakeholders that can allocate company resources and future investments. Insights can be used to drive R&D investments to make informed innovation decisions. Product managers would also be able to utilize this information to make marketing decisions.

* Where did you get your data? (Kaggle)
* Why is this data useful to solve the problem?

Milestone 2 should include the information outlined in the introduction above. Additional items to address are the following.

* What types of model or models do you plan to use and why? (Time Series Model)

ARMA – Autoregressive Moving Average (univariate time series without trend or seasonal components).

SARIMA

“The idea here is that ARMA uses a combination of past values and white noise in order to predict future values. Autoregression models market participant behavior like buying and selling BTC. The white noise models shock events like wars, recessions and political events.”

* How do you plan to evaluate your results?

We will determine the number of parameters using maximum likelihood estimation (or box Jenkins method?) and fine tune the hyperparameters of the ARMA model, so that it can be used to forecast sales.

* What do you hope to learn? (Which products are the most profitable and where to invest money in)
* Assess any risks or ethical concerns with your proposal (Partial Data from Sales, no fluxuation in sales prices (less seasonal trends, only factor is volume)
* Identify a contingency plan if your original project plan does not work out (Explore geographically the areas that are more profitable, explore ARMA First, if needed we can include SARMA)
* Include anything else you believe is important

The proposal should be a minimum of three pages, double-spaced. You should treat this proposal as the start of your final project paper submission. But also remember this is only the initial proposal – your findings might take you in a different direction for the final submission.

Please submit Milestone 2 in Blackboard under the group submission link. Also, post your Milestone 2 in your Teams project folder for peer reviews.

Sources Cited

Beers, Brian (September 06, 2022). *Electronics Sector*. Retrieved from:

<https://www.investopedia.com/ask/answers/042915/what-electronics-sector.asp>

Additions:

Model we are using and explanation on it (what and why)

How do you plan to evaluate your results?