Problem Statement

Vee doesn't have an efficient way of forecasting budgets for advertisement campaigns of each product in his store.

Description of Scenario

My client, Vee, is largely responsible for marketing campaigns in his company which sells smartphone accessories [1]. Due to having over 3000 products across his store, he finds it difficult to accurately forecast budgets for marketing campaigns for each individual product. He currently makes budget forecasts with limited data and intuition which is not always reliable. He needs a database which will provide a formal forecast using the consumer data from his analytics.

Rationale for Solution

The reason a computer program is needed is because in terms of predictive analysis, computers have a much higher accuracy percentage than human intuition and estimates as they've previously been doing. As the data is extremely vast and would take a very long time to analyse by hand, whilst a computer program can do these calculations using all the data in a matter of seconds.

A stand-alone application is preferable as a company at this scale has multiple security concerns and significant data that if were to be hacked and stolen would cause many problems. Furthermore, there would be much more customisable options to cater to their preferences.

I'm more familiar with Python than other programming languages and since this program has some aspects that require more well-rounded knowledge of programming, I felt like using Python would be the best option. For the more technical aspects, in terms of data analysis and visualisation, Python is the preferable choice as it is an intuitive language with a wide range of libraries (such as panda, matplotlib and numpy) available for creating an optimised prediction program. Python is also much less time consuming when processing large amounts of data in comparison to Java, which makes it preferable in this case as we're working with a very large dataset.

Furthermore, the pre-existing time-series forecasting models used for analytical projections in python are easy to integrate with relatively high accuracy which is fitting for the aim of the program.

The IDE being used to develop the GUI is Spyder, though it will also be using the PyQt designer as it is a GUI drag-drop GUI-making interface that makes creating applications more simple and intuitive.

Criterion for Success

[1]Interview by author, Bangkok, November 14, 2020, transcript section #1, Appendix 1A

Criteria for Success	Y/N	Notes from Client
Functioning simplistic and intuitive GUI design with working elements		
Successfully reads CSV data files into the program and is able to be accessed through other classes of the program		
Generates appropriate data table to view the dataset uploaded and displays all the data in the correct format (correct columns and corresponding values)		
Generates appropriate graph for data visualisation of the data given with appropriate graph type and appropriate values for x and y axis		
A functional predictive algorithm that can successfully predict sales **refer to appendix for interview		
Generates an appropriate table that displays sales prediction against months with appropriate columns and corresponding data **refer to appendix for interview		
Generates a graph for sales prediction that displays the prediction appropriately with appropriate graph type with two lines for comparison and appropriate x and y plot values **refer to appendix for interview		**Easy to read