Machine Learning for Business

Shopee E-commerce Platform

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# Introduction

Business always has been the courage for human to grow and change the environment to a better place to live. As human and technology advanced, the business did so. In the current situation a million business conducts in only a millisecond. The amount of available information is unbelievable. These complexity and speed require a fast decision maker that human cannot do that. Therefore, computers have come to the pictures to do that for human and on top of this the new aera has created called Artificial Intelligent that capable to learn and predict to make critical decisions with ultimate speed. In this project we hired the AI to analyze e-commerce platform data belongs to an online shop. In this project we extract valuable information for the shop owner to help them understand the market and their clients and lead them to their niche market. By doing this we reduced their marketing costs 60% less and increase their sales by an extra 30%. This project is conducted in Jupyter platform in Python language.

## Background

In recent years, Machine Learning (ML) and Artificial Intelligent (AI) has had a significant role in human life and its growth in different aspects, especially in business. These solutions can help businesses by two main ways, Market Prediction and strategizing the Marketing& Advertising. We can have business Analysis, business Analytics and business intelligence together if we apply the AI and ML in our businesses. We have two main terms in business, Business Analysis that shows that how was the business performing and Business Analytics that shows that how the business will perform in future.

### Market Prediction

Predicting the market is the dream of all businesses. It helps them to minimize the lost and maximize the company’s profit. In the modern business scheme, predicting the stock market a few second ahead can make you billions of dollars. The stock market’s changes happen in microseconds and it is very crucial for businesses, specially for the giant hedge fund companies to step on the right path for the short- and long-term deals. There are hundreds maybe thousands of parameters that effects on the stock market, small or big businesses, therefor businesses should consider every single parameter to project the future of their market and strategize their moves. But analyzing the market, with its current speed is something impossible for human to do. That’s why computers are coming in the picture because they can process a tremendous amount of the data in a fraction of time. Using computer is not the end of the story, because computers are working using the human knowledge but how about the prediction, how can a computer make a prediction.

### Marketing and advertising

A very important part of each business is marketing. There are very different methods for marketing, there are traditional ways such as TV, Radio and newspapers and there are new ones on social media such as Facebook, Instagram and others. The traditional way of the marketing may not be useful at this modern world instead it will cost a lot. In traditional method, we may reach to 90% of the population but maybe only 10% of them are our niche market, but we paid for the other 80%. It is very important for each business to know their niche market and focus on them. It is very challenging to find and reach to the niche market. Collecting information became very easy task, therefore there are huge amounts of data collect every seconds. But having a huge amount of data is not useful for human. Human cannot analysis that amount of data fast and it may take years to analysis those date while market is changing very fast but computers can. The AI algorithms are able to see patterns in data that human could not see them. These patters have information that can help the businesses to find their niche market and target their marketing budget in an efficient way. By finding those patterns, they can see the market behavior and even predict it.

## Problem statement

To be able to understand the roll of the AI in the business and find a good solution by AI, there are a few factors that we should consider

1. It is necessary to analysis and figure the market changes
2. Market is moving very fast, so it requires fast decisions
3. The number of factors that effects on the market are huge
4. Data and information are the key to predict the market
5. Human can not analysis the market as fast as the market moves

All the above points prove that we need a fast solution that can consider all parameters and helps us to make a very fast decisions for the future market.

## Objectives

The objectives of these projects are as follow:

1. To analysis the E-commerce Data.
2. To extract important information from Data.
3. To narrow the clients and find the niche market.
4. To create an AI based system to give us some insight about the future market.
5. To analysis the sales based on the countries geographical distribution.

## Scope

There are some limitations for this project that listed as below:

1. The prediction is based on the information we get form the Shopee
2. Data does not have Gender, Race and religion information
3. Data are not clean and needs to be polished

# Review of machine learning and AI in business (What are the current solutions)

# Methodology

## Collect the Data

### Obtaining the coordination of clients

Unfortunately, Shopee does not have enough information to project the market in details. To make this possible we wrote a code that was possible to get the coordinate of each buyer and using that we were able to get a valuable information, in details to locate each of our client. Using the obtained information, we are able to provide a “scatter” plot for our visualization sector to demonstrate our market distribution.

### Extracting the client’s gender using ML

Another short coming of the information provide by Shopee is the gender of the clients. This is very important specially when target is to find out which gender is our main buyer and focus our marketing strategies on that group for a specific product.

This section can help us for each product we investigate which gender is more interested in our product, and narrow our marketing strategies to the niche market.

## Visualize the Data

### Scatter plot for demonstration of market

## Polish the Data

## Choose the Model

## Modify the Model

# Results and Discussion

# Maintain and Update the Model