



**ANLY482 - ANALYTICS PRACTICUM**

**PROJECT PROPOSAL**

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**E-commerce Data Analytics for Kosmebox**

## **Introduction**

Kosmebox is Vietnam's top beauty e-tailer and is expanding its influence across Southeast Asia. Driven by its customer-centric mission statement and its commitment towards efficient customer-service, Kosmebox aims to make cosmetic products easily accessible to Southeast Asian consumers. Despite its late entry to the market in 2015, its customer-base has reached 10,000 and is still growing rapidly. Through Kosmebox's online portal, its customers are exposed to products offering from over 100 cosmetic brands. Most of which are imported directly from Korea, US and Vietnam.

Like many other start-ups, despite its initial success, Kosmebox's current business model is no longer capable of fulfilling the needs of its expanding market. It starts to face issues in managing its ongoing business processes, especially in areas like inventory management and warehouse selection. As a result, Kosmebox is in need of an analytics solution that is capable of streamlining its inventory management business process and optimizing resource allocation in cases like, warehouse selection.

## **Problem Statement (Motivation)**

### ***Inventory Management***

There is no systematic way for Kosmebox to decide on the replenishment quantity for different products. Current forecast on product type and quantities need to be ordered is mainly based on human interpretation of current sales and inventory level. In that case, forecasting results are inaccurate and unreliable due to the unforeseen external factors resulting in sales quantity fluctuations in different months. On top of which, factors leading to peak season sales are not taken into consideration when structuring the forecasting model. Furthermore, as Kosmebox's decision on replenishment quantity is scheduled to be 20th of each month, forecasted sales quantity may potentially deviate from this month's actual sales quantity.

### ***Warehouse Selection***

Furthermore, as the Kosmebox's sales growth and business expanded, it plans to set up one more warehouse to improve operational efficiency. This may be potentially achieved by saving delivery cost and processing time when deliveries are made from warehouses in the region. As a result, Kosmebox is looking out for an optimal warehouse location to balance the workload with operating warehouses. In order to facilitate our sponsor's decision-making process, we

would need to analyze the new revenue and cost (including labor and warehouse rental costs) if he decides to put a new warehouse into operation in the region. If the new warehouse location is deemed feasible, we would need to highlight the amount of stock that Kosmebox should keep inside the new warehouse to operate for the 1 to 2 months period.

## **Proposed Solution (Objective)**

### ***Inventory Management***

1. Trend Analysis

We would like to analyze past 2-year sales data so as to have an overview on the sales trend for different products. Building upon which, we would identify peak seasons throughout the year as well as their respective sales capacity.

2. Replenishment Forecasting

Building upon the trend analysis, we would develop a web application, which aims at helping Kosmebox to predict sales quantity for the upcoming month and recommend replenishment quantity based on current inventory level. In order to prevent uncertainties arising from unforeseen factors, the forecasting will take these factors into consideration so as to predict the precise sales capacity during peak seasons.

3. Data Visualization

By visualizing the inventory and sales level, the sponsor would be presented with a holistic view on the sales performance and inventory level throughout the year.

### ***Warehouse Selection***

1. Location Analysis

Geospatial analysis on the sales region covered by the new warehouse in Hanoi so as to determine its potential revenue and cost as a result of geographic factors.

2. Cost Analysis

Cost analysis on setting up and operating the new warehouse in Hanoi, as well as predicting the shipping cost savings in distributing products from the new warehouse instead of the existing warehouse in Ho Chi Minh City.

### 3. Trend Analysis and Replenishment Forecasting

Use the model we proposed for inventory management to identify the sales trend and forecast the inventory level for all the products in Hanoi and Ho Chi Minh City. This enables us to compare the forecasted total profit and current profit, which effectively facilitates the decision of opening up a new warehouse in Hanoi.

## **Methodology**

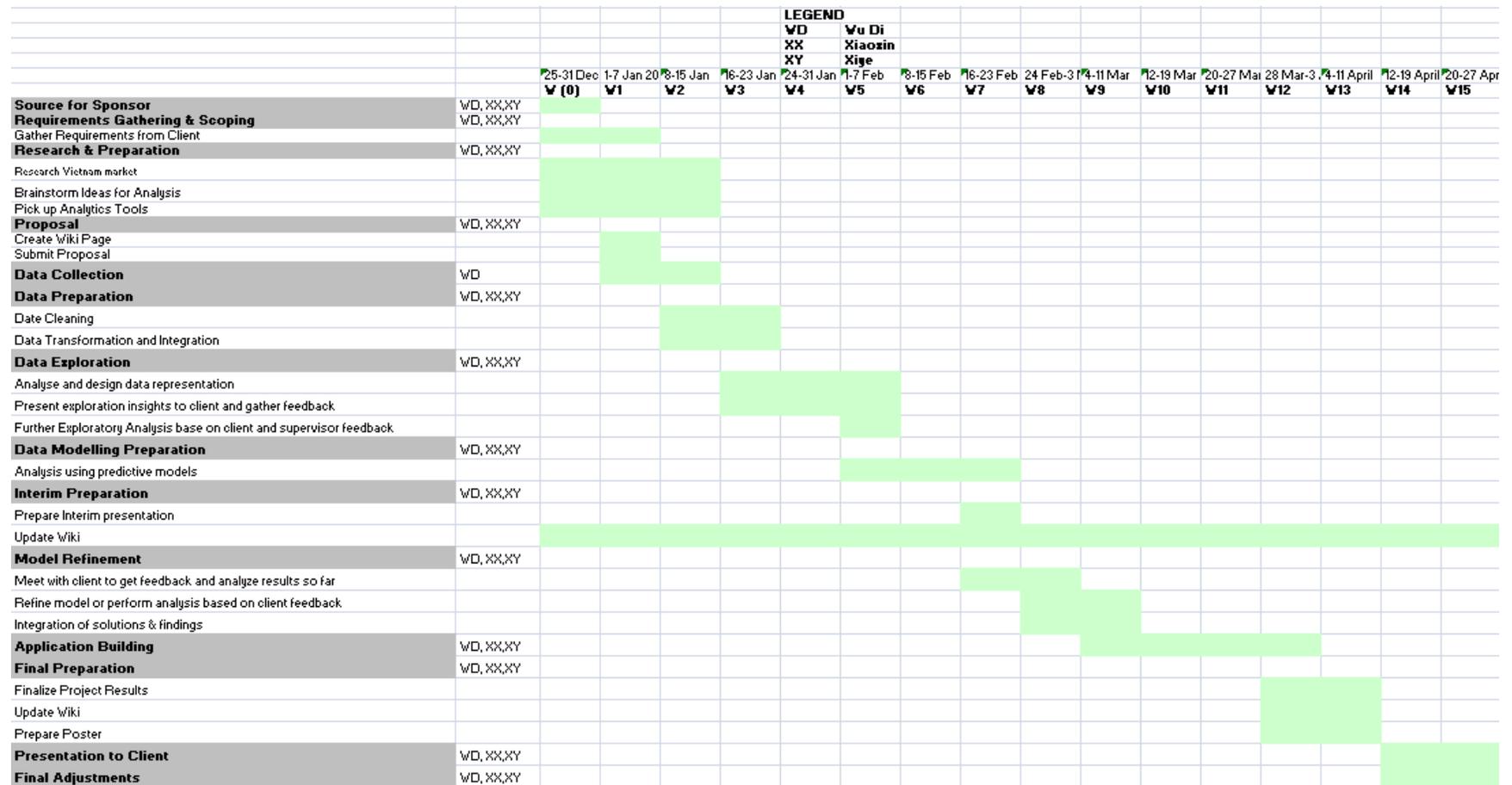
Our group plans to make use of various analytics tools and techniques that we have learned in multiple analytics courses prior to this project. Based on the 2-year sales data, we will be able to construct a data visualization dashboard, which is capable of showcasing Kosmebox's sales trend and giving us a 'birds-eye view' on potential factors affecting its sales performance. Building upon which, data mining techniques will be helpful in filtering out essential factors contributing to the sales well-being in the case of inventory management and cost analysis in the case of warehouse selection. Together with appropriate modelling and simulation, these factors may be of great use in constructing the replenishment forecasting business model in both cases.

Meanwhile, geospatial analysis is essential in coming up with an optimal solution for resource allocation. Proximity of Kosmebox's warehouses and distribution centers to its customers in Hanoi is a significant factor affecting delivery efficiency, customer satisfaction and most importantly, sales capacity. On top of which, geospatial analysis is also helpful in understanding underlying geographical constraints, like landscape and transportation, when it comes to warehouse selection.

## **Sponsor meeting**

As our sponsor is resided in Vietnam, we are mainly liaising with our sponsor through Skype and email. During our skype sponsor meetings, we will be showcasing our minimum viable product, gathering requirements and managing our sponsor's expectation. After which, we will be conducting our internal meeting, consolidating findings and further inquiries before forwarding them to our sponsor through email.

## Timeline & Work Allocation



## Reference

<http://www.kosmebox.com/>