



SINGAPORE  
MANAGEMENT  
UNIVERSITY

*ANLY482- ANALYTICS PRACTICUM*

*TEAM STEADFAST*

***PROJECT PROPOSAL***

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# 1. PROJECT PROPOSAL

## 1.1 Overview of the company

Pharmaceutical Company X is a global pharmaceutical company that researches and develops medicines, vaccines and other consumer health products. They are known as one of the world's biggest research-based healthcare company with manufacturing sites, commercial and corporate offices based in Singapore. The company provides vaccines and medicines to consumers in Singapore to help prevent and treat diseases such as allergies, asthma, cancer, dermatology and other infectious diseases.

The team aims to provide analytical insights with regards to sales and marketing that will help increase sales and revenue for the company. This will include understanding the consumers' purchasing patterns and trends in Singapore and the sensitivity of promotional activities conducted by the company.

## 1.2 Our Motivation

Willy Toh Zhan Hong:

I want to understand the field of application for data analytics in the real world practice. I also want to know how past data will have a direct influence over a company's current and future performances.

Since I am pursuing a career path in this field, this project will definitely be useful to me to better understand the growing trend in data analytics and how companies can leverage on such method to add value to both themselves and their stakeholders.

Ong Lee Ting, Casselyn:

Since big data is one of the upcoming trends in the market, I am motivated to pick up this skill and explore why it is becoming an essential in every industry. Undertaking this project will not only allow me to practice using analytical tools on real data, it will also give me insight with regards to pursuing a career in the analytics field.

Dhar Sohini:

Working with real life data in the pharmaceutical sector is extremely interesting as I have a desire to work closely with big data in this field. I want to learn more about the field of data analytics and also apply the concepts and applications I have learnt previously during my analytics internship. I hope to learn a lot about the tools and skills needed in analytics and also have a better understanding of the healthcare sector in Singapore. Finally, I just want to work closely with an actual company to have a better understanding of the working world of analytics.

Jonathan Chow Ga Chee:

I want to be exposed to the field of analytics and to learn about what the current perceived uses of analytics as a tool is in our daily world. I hope to be able to be at the forefront of applying it as a skill or tool to other industry processes in operations management, some of which might not even have been conceived today.

## 2. OVERVIEW OF THE PROJECT

### 2.1 Objectives (Business and Analytical objectives)

From a business point of view, we aim to shed light on the following macro issue. We would like to find out which of the key resources (i.e. sales representatives, products, processes) drives sales and business performance for our client. Through this, we wish to help them gain a better insight on how they can allocate resources to maximize profit. This macro issue can be broken down into the following questions, which will aid us in providing a more comprehensive analysis for the client.

- a) What is the best way to allocate limited resources, such as sales representatives, as compared to peddling via other channels such as telesales?
- b) What is the optimal proportion, frequency and pattern of visits for various brands?
- c) For different subcategories of channels, what is the optimal and required restock pattern?
- d) What are the top 8-10 power brands that should be focused on in 2018 and through which channel are they best promoted?

These would help to provide a more focused sales effort for the client in 2018, and leading up to the industry trend of using big data to make better decisions to maximise revenue and provide better healthcare for the people (Healthcare 2020). To achieve the above business objectives, our analytical objectives are as follows:

- a) To use analytical methods to discover product and process sensitivity to sales.
- b) To formulate a robust and accurate framework of resource-to-resource relationship sensitivity, that will allow the client to better align business objectives to industry ecosystem relationships.

Lastly, from an industry point of view, it would be useful to understand if there are any difference in relationships within each subcategories defined by the industry. Some questions we feel would help are:

- a) Do clinics participating in the Community Health Assist Scheme (CHAS) experience a higher restock rate?
- b) Do clinics in matured estates have a higher restock rate?

## 2.2 Data (Meta and Digital Data)

Our client will be supplying us with both current and prior year (2016) data. As Client X wants us to focus back on the same type of data from 2016, we will be provided with the same type of files and invoices but with the latest data. The type of files and invoices are summarized in the table below.

File Name	Description
Call Details	Information on actual interaction between Sales Reps, Sale Targets for a Product Brand
Invoice Details	Transactions of product purchases by Sales Targets
Employee	Information on employees and their teams - "Therapy Area"
HCP	Information on individual doctors
HCO	Information on clinics, organizations

We are currently waiting for the client to compile the latest data from 2017 as we have just signed the nondisclosure act form.

## 2.3 Methodology

As the client has requested for us to build on what the previous team working with them have come up with, we intend to validate the usefulness of their (i) data analysis and (ii) analytical framework. This would require us to cross check their findings on the current data and to see if the results would still hold true.

We aim to form as accurate a relationship sensitivity map as possible, that links together the analytical, business and industry objectives. This map will allow us to visualise and compare how certain relationship sensitivities determine the overall impact of the client's allocation of resources.

In the analysis of data, we will be utilising SAS JMP Pro 13 software as our main analytical tool for data cleaning, preparation and exploratory analysis. The software will allow us to conduct statistical analysis on large datasets by using a predictive modelling workflow and can generate results with interactive visualization that will be friendly to end users. In addition, since it is widely used for statistical discovery, tutorials and guidelines for the software are easily accessible online.

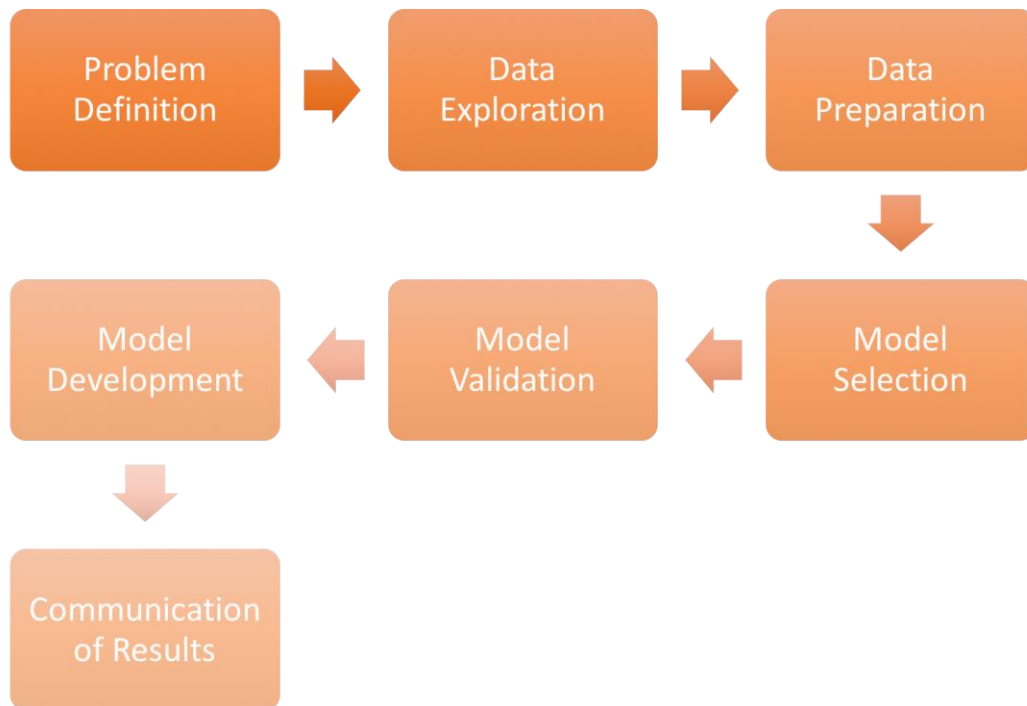
Building upon the relationship sensitivities, we can formulate and suggest an evaluation metric to come up with a list of top 8-10 power brands to the client to focus on in 2018. From a business point of view, this would require an outline into possible approaches they wish to take (i.e. minimised risk, minimised costs, market share growth, or pegged to industry trends), and using our proposed metric to shortlist product brands and outline sales strategies.

## 3. PROJECT PLAN

### 3.1 Scope of work

In the validation of the current work done by the previous team, we would need to break down their findings into relationship pairs that they have examined, and from there derive any missing relationships between sales and various key resources that the client invests. This serves also as a primary sensitivity test, allowing us to better focus analytical efforts into areas which appear to have greater sensitivity.

The steps in detail are as follow:





### Problem Definition

To sit down with client and to discuss about business problems that need to be solved.

### Data Exploration

To summarize the main characteristics of a dataset.

### Data Preparation

To collect, prepare, clean and integrate data into a suitable form for further analysis and processing.

### Model Selection

To come up with models based on the type of business problems that we are dealing with.

### Model Validation

To verify sensitivity analyses against resource-to-sales relationships as proposed in our model.

### Model Development

To build the most suitable model after validation is done and to test it against data we have on hand.

### Communication of Results

To use information displays such as tables and charts to help communicate key messages contained in the data to the client.

