

# Distribution Analytics – Demand Forecast



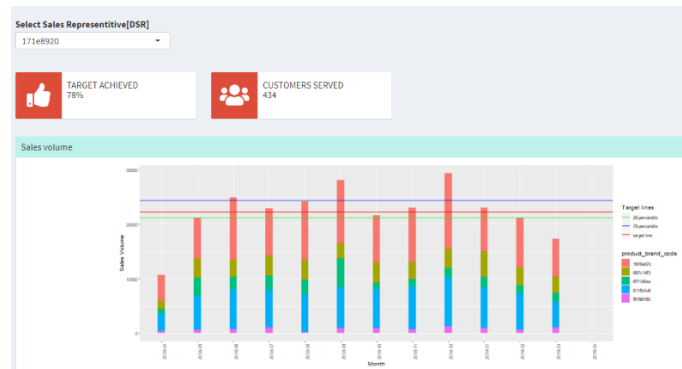
## Issues & Objectives

- A Singapore based company provide multi country mobile platform for distributed sales representatives who gets updated information on demand forecast, recommendation and target sale
- They wanted to build appropriate models for forecast
- All output were to be pre processed in nightly batch run and saved in a centralized database
- A customized software for managerial decision making was also needed



## Challenges

- High attrition of DSRs made it hard to collate a time series sales data
- Customer base changes between transition from one DSR to another
- Intermittent sales data for about 30% of customers
- Discontinued or new product SKUs with short history of sales data



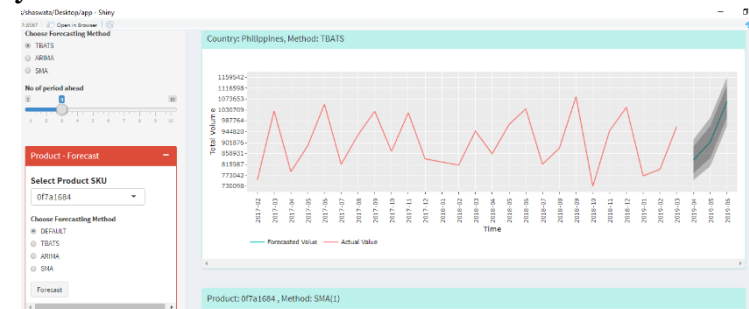
## Solution

- Software developed in R Shiny
- K-means and hierarchical clustering and time series forecasting methods were used
- Batch code is developed in R with input and output link to client database.



## Benefits

- Batch run for a dataset of 60K transaction take less than 10 minutes producing multiple output tables
- Experiment with customer segments and view a particular subset for any discount/promotion
- View the position of customers and the recommendation to be made
- Review the profile of DSR and extent of target achievement
- Employ Various methods and visualize actual vs forecast



# Infrastructure Planning – Offshore Drilling



## Issues & Objectives

- Long term infrastructure planning – over a 52 year horizon
- Determine the sequence in which sub-sea wells should be drilled to maximize profit



## Solution

- Given 140 polygons (indicated by lat/long) which ones should be drilled?
- When should each polygon be drilled?
- Well platforms are needed to support the drilling of wells
  - What is the number of well platforms required? What capacity should each have? When should we commission each platform?
- Hydrocarbon flow from wells will be stored and processed at production platforms
  - What is the number of production platforms required? What capacity should each have? When should we commission each platform?
- It is necessary to make these choices together and not sequentially
- Constraints
  - Number of rigs available
  - Number of polygons to be drilled in any period limited by available capacity of well platforms
  - Well flow rate in any period limited by available production capacity
- Problem modelled and solved using complex optimization techniques
- **Provides a critical strategic planning tool for senior management.**
- **Makes possible the modelling of multiple scenarios essential in view of severe uncertainties especially in the price of oil and actual production caps of wells.**

# Container Repositioning for Large Indonesian Shipping Company



## Issues & Objectives

- Client – large Indonesian shipping company
  - ❖ Transport regulatory authority in a South East Asian country commissioned a system to:
  - ❖ is estimated that about 20% of all containers shipped by sea and 40% of those shipped by land are empty
  - ❖ Cost of shipping empty containers could be up to 25% of operational costs
  - ❖ <http://www.greenport.com/news101/Products-and-Services/reducing-empty-container-costs>



## Solution

- Developed planning software to plan empty container movements so as to minimize shipping costs resulting in large cost savings

