

MARKET INTELLIGENCE AND TOOLS OPTIMIZATION FOR RIGID PACKAGING

IE3100M Systems Design Project (AY2017/2018) – Group 13

Team Members: Gan Ding Han | Rosamund Soh Qi Fang | Tan Wai Kit Nicholas | Teng Jin Chen | Wang Jixi
 NUS Supervisors: A/Prof. Chew Ek Peng | A/Prof. Lee Loo Hay
 Unilever Supervisor: Ms. Aurore Belhoste



Project Overview



Lack of Resilience in Managing Sourcing Strategy

7-Step Sourcing Strategy

- 01 | Profile Cluster and Supply Market
- 02 | Sourcing Strategy for Cluster
- 03 | Supplier Portfolio Generation
- 04 | Selection of Implementation Path and RFx
- 05 | Negotiation and Selection of Suppliers
- 06 | Operational Integration with Suppliers
- 07 | Continuous Benchmarking of Supply Market

Problem Description

- Unilever has identified a gap in the Rigid Packaging Procurement Team's current workflow and desired workflow (7-Step Sourcing Strategy). This was stated to be due to the lack of resilience in managing their sourcing strategy.
- The project hence seeks to implement solutions targeting individual steps of the 7-Step Sourcing Strategy in order to close the gap and allow for an incremental improvement to the workflow.

Key Skillssets



Improve productivity and efficiency



Increase knowledge of upstream suppliers

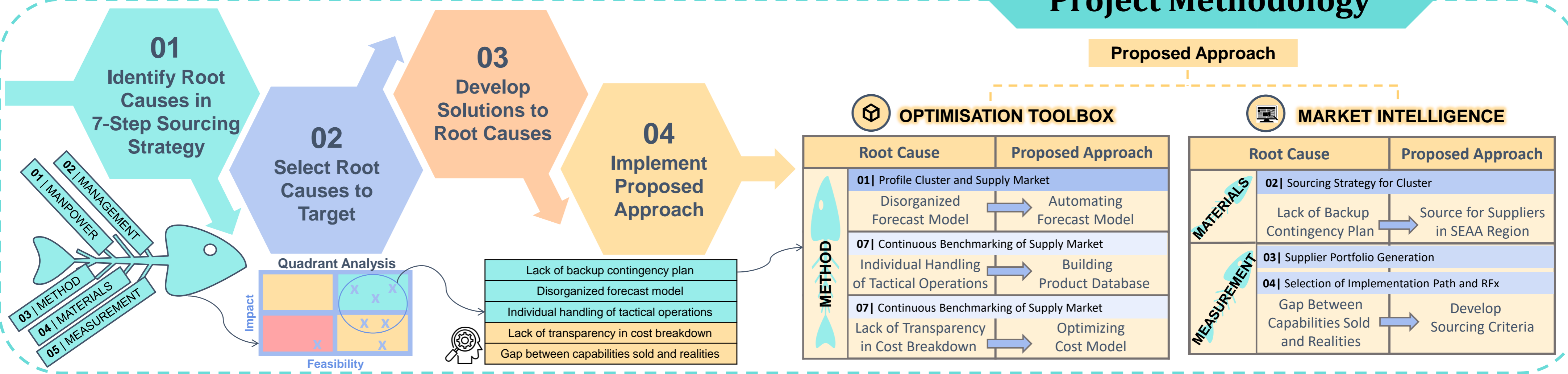


Develop supplier evaluation criteria

Key Objectives

- Systems Thinking:** Analyze workflow to understand interdependences among its components and conduct Root Cause Analysis
- Human Factors Engineering:** Improve data visualization and develop automated tools to eliminate error prone processes and reduce time taken to conduct repetitive actions
- Decision Modeling:** Utilize Analytic Hierarchy Process and Sensitivity Analysis as an approach to making decisions

Project Methodology

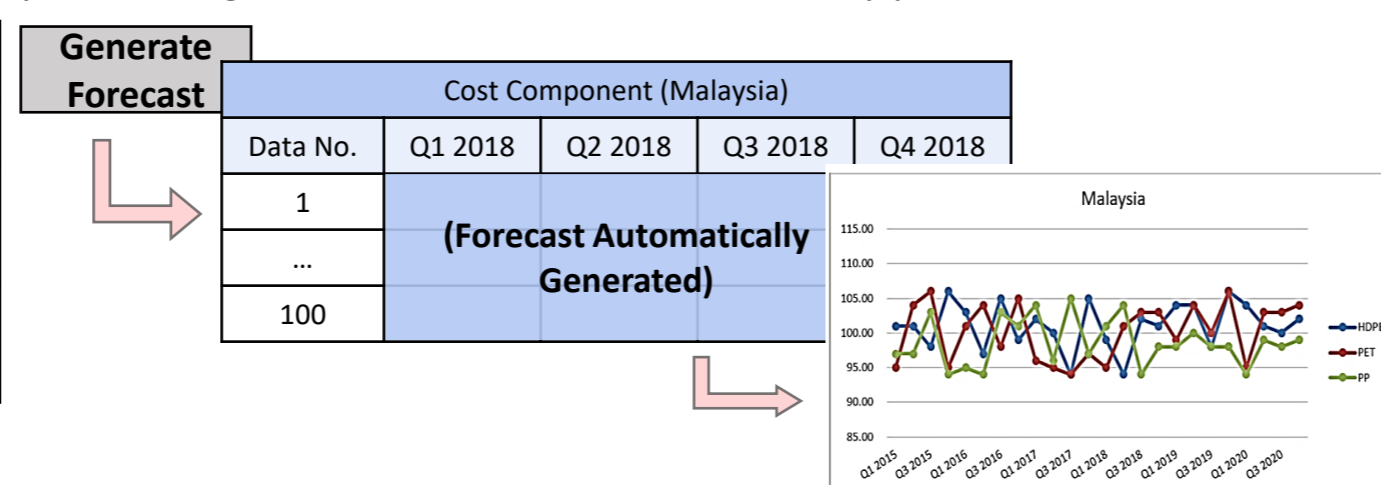


Project Implementation

Automating Forecast Model

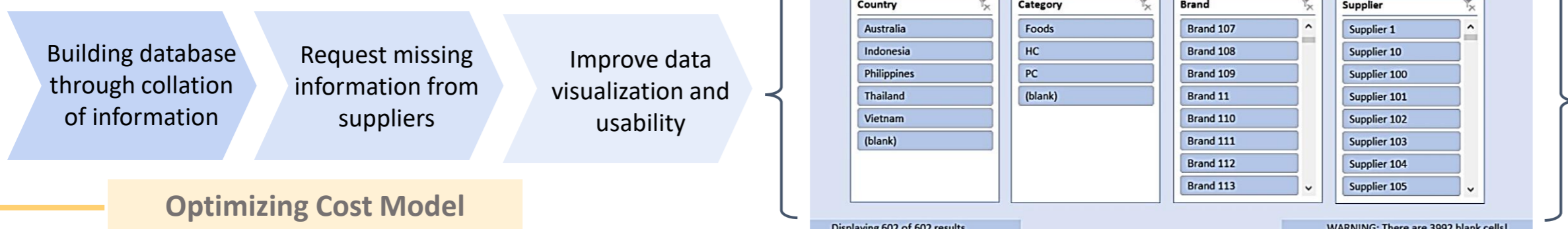
- Forecast Model is a tool utilized by the team in the initial process of profiling and clustering the market by geographical region. It helps to identify spend patterns and spend clusters on the plastic bottles which will help Unilever establish patterns for opportunities in the market and guide their decision-making in the latter part of the systems process.
- Improvements were made to improve the efficiency of utilizing the forecast model based on 3 key problems identified.

Problem Identified	Improvement Made
1. Information overload	✓ Show/ Hide data
2. Manual and error-prone data entry	✓ Automatic updating of backend data and indices
3. Difficult to identify trends	✓ Display graphical trends from consolidated indices



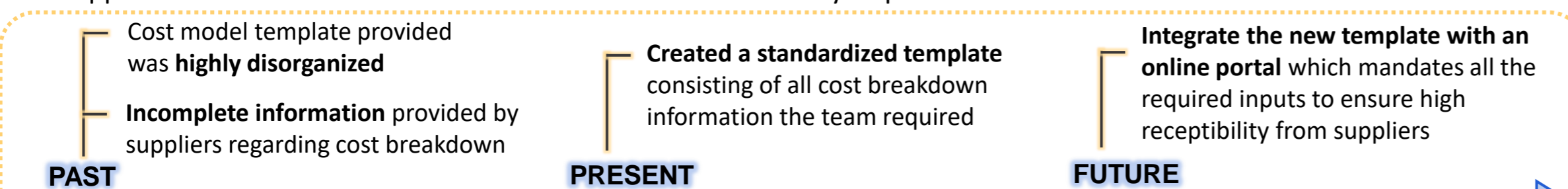
Building Product Database

- The development of a product database serves as a consolidated platform containing all product types in the South East Asia and Australasia (SEAA) Region. The database allows for increased visibility of suppliers across all partnering suppliers in the SEAA region, thus reducing unnecessary time spent sourcing for information when dealing with supply emergencies.
- After constructing the database, further improvements were made to include a dashboard with search functions to facilitate the usage of the database.



Optimizing Cost Model

- The Cost Model is a tool given to the Unilever team by their suppliers to provide cost breakdown information of bottles and closures. Currently, each supplier provides a template of their own and designing a standardized template across all suppliers allows the team to have access to the information they require.



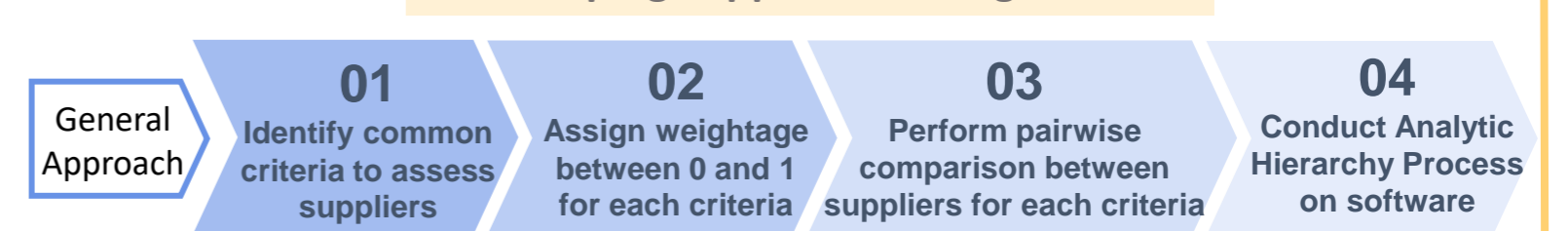
OPTIMIZATION TOOLBOX

Sourcing for Suppliers in SEAA Region

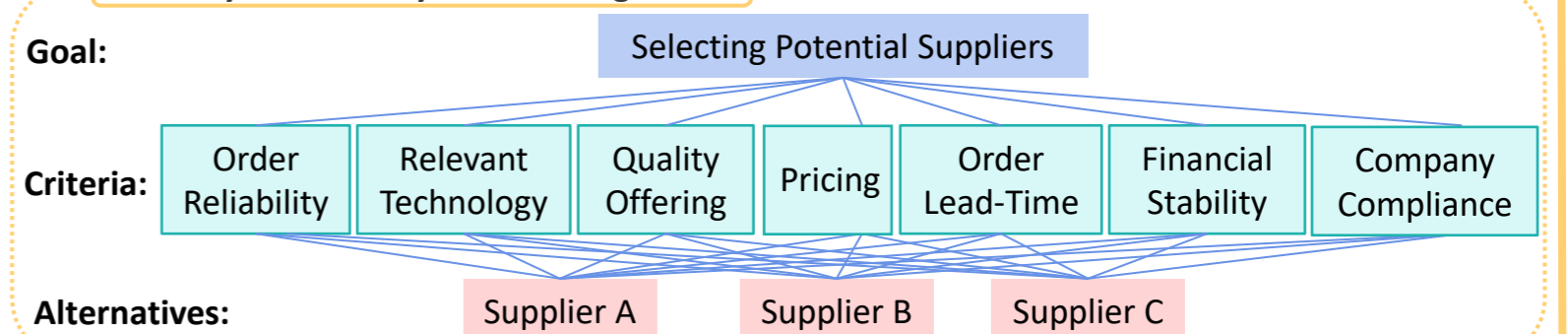


- Developed a database to improve knowledge of upstream suppliers from the above countries
- Provided alternative sources of suppliers with relevant plastic manufacturing capabilities to cope with unanticipated emergencies

Developing Supplier Sourcing Criteria

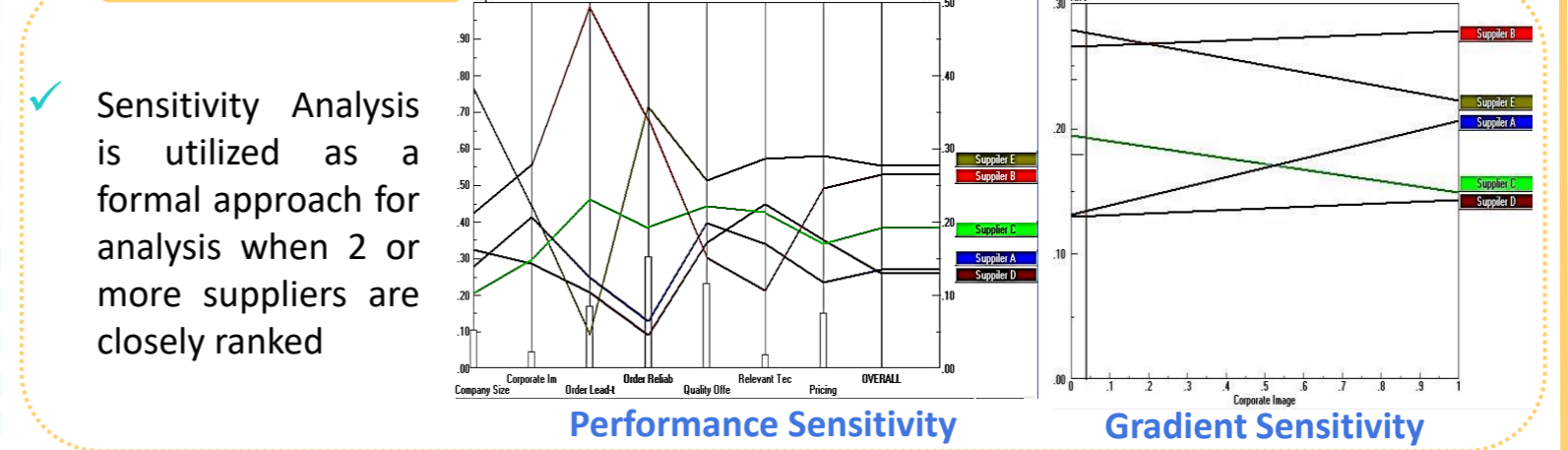


Analytic Hierarchy Process Diagram



- Developed a supplier evaluation tool using Analytic Hierarchy Process as an objective assessment to select each and every potential supplier

Sensitivity Analysis



MARKET INTELLIGENCE

Project Achievement

- | FORECAST MODEL | PRODUCT DATABASE | COST MODEL | MARKET INTELLIGENCE |
|--|--|--|---|
| <ul style="list-style-type: none"> ✓ Approximately 6 hours of time savings from manually updating every formula in the forecast model ✓ Eliminates human error rate of about 5% while updating forecast for the quarter ✓ Better top-down visibility through added graphs to aid in further analysis | <ul style="list-style-type: none"> ✓ Promotes quick and accurate identification of information on backup sources in the event of supply emergencies ✓ Improved usability through implementation of search function ✓ Increased transparency of product knowledge across department | <ul style="list-style-type: none"> ✓ Improved usability and visibility through standardizing and optimizing the design of the template using Human Factors Engineering concept ✓ Potential time savings estimated at 20 minutes in interpreting the cost breakdown information files from suppliers through the new template | <ul style="list-style-type: none"> ✓ Database on suppliers in the SEAA Region provided Unilever with previously unknown contacts that can serve as new partnerships and opportunities in the future ✓ Potential cost savings through the development of an objective evaluation framework for Unilever to utilize when selecting future suppliers to effectively make decisions between competing suppliers |