



Overview

This assignment is worth **18%** of the overall subject grade.

This assignment is due on **Sunday, May 28, 2023** at **11:59 PM**.

The assignment must be submitted via the University of Melbourne LMS.

One person must upload one **single ZIP or RAR file** on behalf of the group, containing:

- One Tableau workbook. A single file must contain your dashboard, data sources and visualisations.
- 3-5 minute video with your brief analysis and recommendations.
- You may optionally submit sketches of your dashboard designs, with explanatory notes. In the case where you are unable to achieve the full implementation of your design in Tableau, you may score additional marks for the design aspect based on your sketches. 40% of the marks for this assignment are for the design. *Note however, that you must describe the nature of all interactivity, colour assignments, calculations of data values in charts and KPIs where not obvious, and any filtering of data that is not controllable by the end user.*

It is to be completed in groups of **2-4 students**. You will be assessed as a group. All group members are expected to contribute equally to your group's effort. Each group is responsible for managing the distribution of the workload for completing the project.

Learning Outcomes

This assignment will allow you to develop your ability to analyse data and present information to support operational and strategic decision making using Tableau™ software.

More specifically:

- Design the layout and content of an interactive dashboard to support decision making and understand performance of an organization over time.
- Use data visualizations to compare aggregate measures between subsets of data or over time, to identify patterns, trends and exceptions present in data.
- Interpret data visualisations to explain financial and operational outcomes, and make recommendations for actions likely to improve those outcomes.
- Implement an interactive dashboard with Tableau™ software.
 - Import/connect data for analysis.
 - Select chart types that are relevant to identified areas of analytical inquiry.
 - Create charts to visually display data in ways that aid interpretation of that data.

Preparation

Download and install Tableau Desktop software.

https://help.tableau.com/current/desktopdeploy/en-us/desktop_deploy_download_and_install.htm

Obtain and enter a license key to register Tableau for educational use.

<https://www.tableau.com/academic/students>

Refer to the briefing document for relevant information about Muesli Pty Ltd.

Objective

The CEO of Muesli Pty Ltd has asked you to design and develop an interactive dashboard to support short term decision making at the company. In discussion with the CEO, you realise that the two main drivers of short-term sales performance are production and inventory management. Given the nature of the industry, where customers expect next day deliveries, producing the right products and having them available in the right locations at the right time is extremely important. In the longer term, given the constraints on production capacity, the company will want to optimise/prioritise the product mix towards more profitable products.

The fixed overheads of the company are stable, and not in scope for consideration of managing the short-term operational performance of the company. Profitability is wholly driven by margins - the difference between price and raw material costs (unit margin), and unit margin multiplied by sales volume (contribution margin).

The company operates on a 10-day production cycle, with each cycle planned at least a week before to allow suppliers sufficient time to deliver raw materials. It is roughly decided which of the 12 products will be manufactured each day. There is an efficiency gain when producing the same product for longer periods, as it takes several hours to clean, reconfigure, and stage raw materials to switch products on the company's single production line.

For the first 6 weeks, the company focused on building up stock of product in the main warehouse. Since then, it has adopted an inventory policy to keep main warehouse inventory under 100K, and inventory at each of the 3 distribution centres under 50K. Since the company has been focusing on only 6 products for the time being, this has translated to maximum inventory levels being set between 8K and 11K units for each product at each distribution centre. Every few days, trucks are sent to the distribution centres to resupply back to these product/location maximum levels.

The design of your dashboard must directly support production planning for the next 10-day cycle, enable assessment of the effectiveness of the current maximum inventory policy, and align product mix towards maximising profit.

Dashboard

Your dashboard, must at minimum support the following inquiries:

- At-a-glance assessment of current performance of Revenue, Contribution Margin, Production Yield, and Shipping and Warehousing costs. Totals for the previous 28 days.
- Production vs Sales units for the previous 28 days, by product.
- Contribution Margin vs Revenue for the previous 28 days, by product.
- A benchmark of the current month's revenues with the previous 2 months' revenues.
- Inventory levels over the previous 60 days.
- Current inventory of each product in each location.

As you end the conversation with the CEO, they mention that being able to predict how long the current inventory will take to sell out would be very helpful. "If we can estimate which inventory will sell out first, we'll know where to prioritise resupply. It's been difficult to get inventory levels right because product demand varies between locations and over time. We'd love to be able to get a better sense of where we're going to run low before it happens. Being able to set inventory levels based on days of supply rather than arbitrary quantities could be quite helpful."

Analysis and Recommendation

To illustrate how the design of your dashboard works to support decision making, the CEO would like you to give an informal analysis and recommendation for the following:

1. An opinion on product mix – is the company producing the correct products in the correct quantities to support demand and maximise profit, given that maximum production is limited by factory capacity?
2. An opinion on inventory management policies – are current maximum inventory levels balancing the trade-off between maximising sales and constraining shipping and warehousing costs?
3. A specific recommendation for the next production cycle plan - which of the 6 products to produce on each of the next 10 working days?

Your analysis and recommendations must be supported with evidence and explained conclusions made from the data; presented visually. Using ONLY your Tableau dashboard make a brief (3-5 minutes) video presentation giving your recommendations - no spreadsheets, no slides! You may optionally use ONE SINGLE slide or page outside of Tableau to **summarise** your recommendations and list team members.

The tone of your analysis and recommendation is informal. You're offering guidance and demonstrating how to use your dashboards effectively. What's important is that your recommendations are from reasoned conclusions based on your interpretation of the data, rather than making wild guesses or unexplained hunches.

The entire team does not need to be present or talk during the video – only 1 or 2 people should talk.

Marking Guide

Dashboard Design Choices assist the viewer to assess organisational performance and investigate areas of interest.	Weight 40%
The choice of KPIs and data are applicable to the functional area.	10
Chart types are well chosen to reveal important performance trends or patterns.	10
Charts are clear and not overloaded trying to support multiple purposes or messages.	
Layout and placement convey hierarchy between levels of detail and or filtering actions.	10
The user can interact with the dashboard by means of filters and tooltips. The choice of interactions provided are applicable to the functional area and stated operational goals.	
The design, look and feel of components is consistent.	
The colour scheme is intentional and chosen to convey semantic meaning, highlight key patterns or emphasize key elements to focus attention on specific areas. Colour choices are consistent.	10
Clarity and Correctness The implementation of the dashboard is well executed and free from errors.	40%
Charts are accurate, free of computational, aggregational or data importation / filtering errors.	10
Filters are transparently observable, and do not make point-in-time assumptions.	
Interactivity functions correctly and does not lead to distorted or non-sensical displays of data.	20
Data are labelled directly and are intentionally sorted.	
Proportions are accurate and well chosen; intervals are equidistant for interval and ratio data.	
Titles are short, well-chosen, and clearly indicate what performance measures are being shown in what context.	
Charts are free from unneeded decoration; redundant labels; over-precision; distracting grid lines, tick marks or axis lines.	
The implementation is simple and tidy. All components are in a single Tableau file.	10
The number and content of data sources is balanced to facilitate analysis; each one well named with a distinct purpose containing only relevant content (minimal overlap, redundancy, or irrelevance)	
Dimensions, measures, and parameters are organised and well named. Worksheet tabs are well organised and well named.	
There is a high degree of automation, with minimal to no manual steps required to update data.	
Analysis & Recommendation (Video Content) The analysis and recommendations are clearly made, and well-reasoned.	20%
The presentation is a fair summary or conclusion of relevant charts and tables - there are no misinterpretations. The final recommendation is easily and directly linked to the company's stated financial and operational goals.	10
Spoken audio is clear and understandable. Pace is moderate and natural. Sentences are well-constructed, and of reasonable length. Discussion points are made once and well-explained.	10
The overall sequence of presentation is easy to follow; individual portions complement and reinforce each other to support the overall message.	