

Brew Management Tool

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Introduction

Lone Oak Brewing Co. is a locally owned and operated Craft Brewery and Taproom in Borden-Carleton, PEI. Due to increasing popularity, Lone Oak experiences challenges in keeping up with growing demand.

Initial Concerns

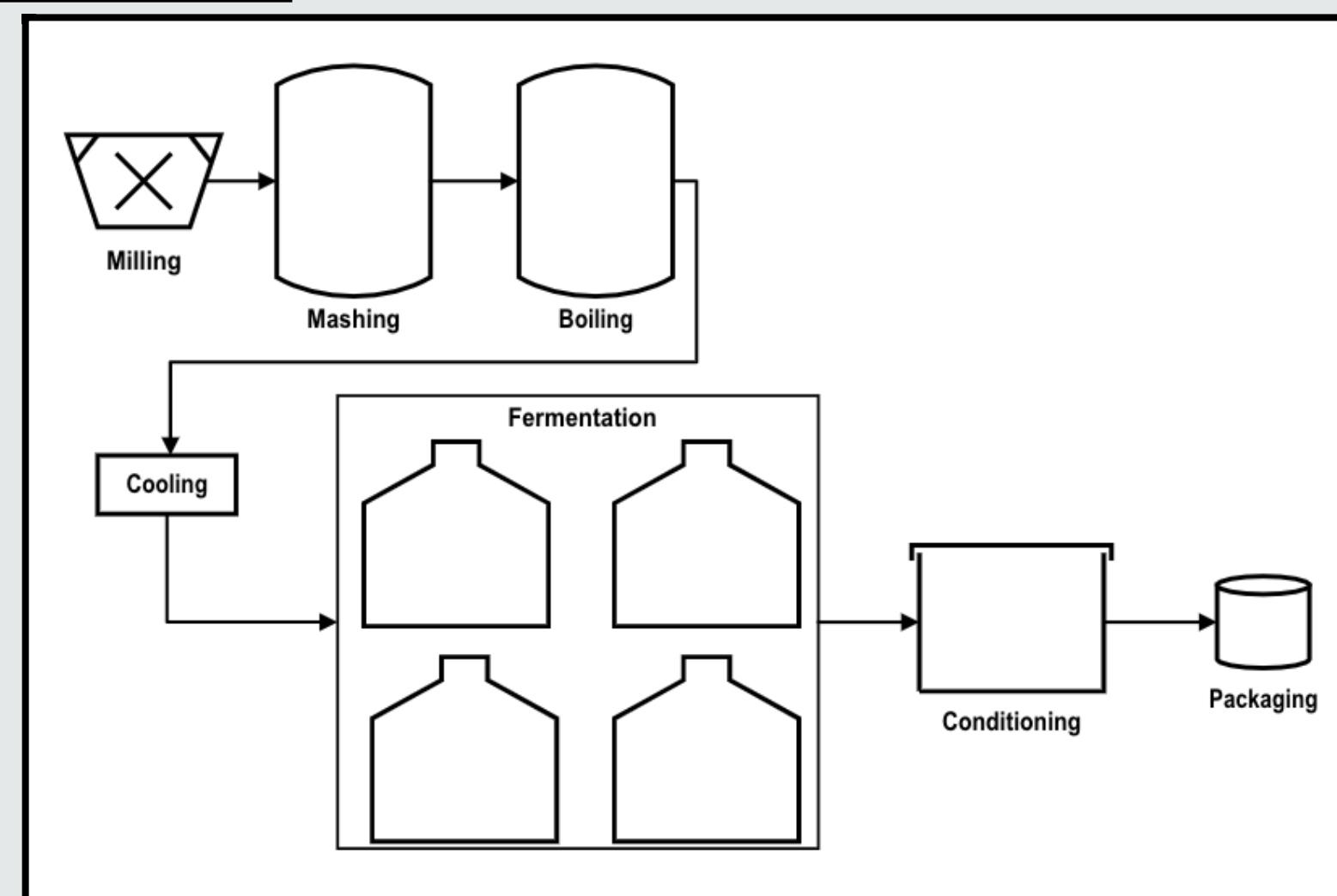
Upon initial consultation, Lone Oak Brewing Co. expressed the following six concerns. Highlighted in **red** are the concerns addressed by the Brew Management Tool.



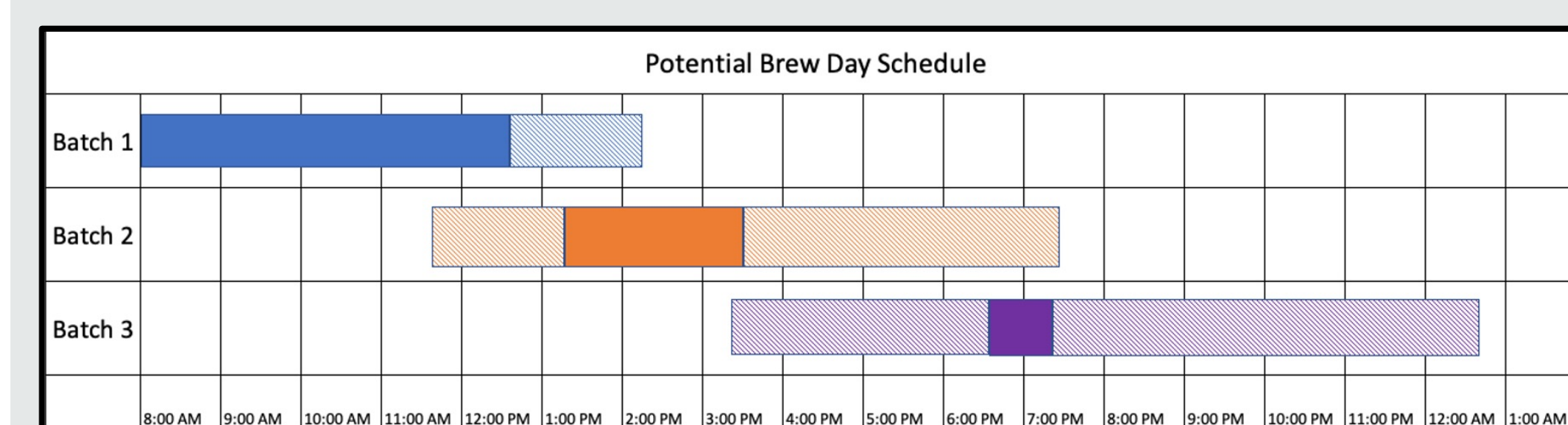
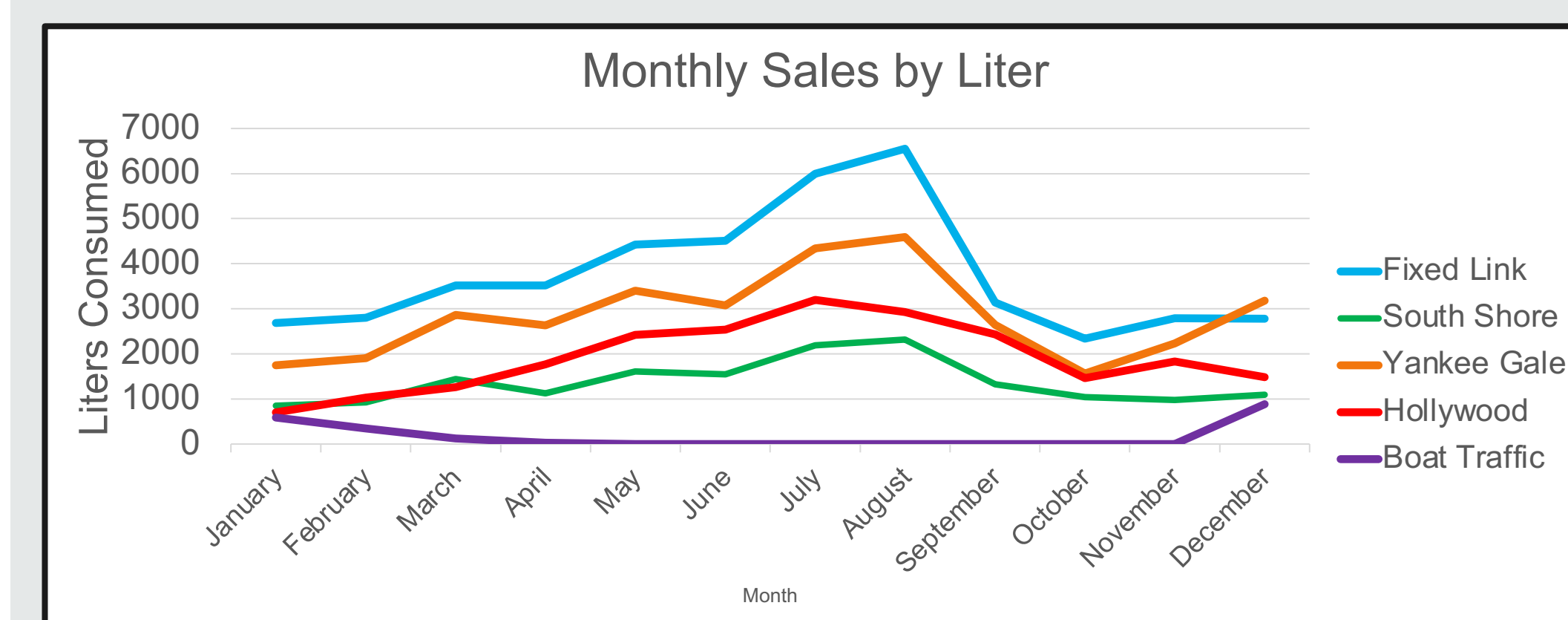
Problem Statement

Lone Oak is not meeting demand. To meet this goal, they need to produce more beer by increasing capacity or optimizing their current brewing process.

Brew Process



Analyses



Result

Lone Oak Brewing Co. is capable of meeting demand with increased management of brews through an all-inclusive Brew Management Tool.

The screenshot displays the Brew Management Tool interface. It includes three charts: 'Total Volume (L) by Month', 'Number of Cans by Month', and 'Number of Kegs by Month'. A 'Can / Keg Ratio (Higher Ratio = Higher # Cans)' table is also present. The main feature is a 'Schedule' grid showing brew counts and conditions for various fermenters and bottling lines from January to July. A 'Data Entry' section allows for adding new products and managing templates. A 'Forecasted Growth' table is also visible.

Features Explained

- 1) Charts – Three charts are provided to show the Total Volume, # of Cans, and # of Kegs on a monthly basis. The lines on the charts are color coded to display Demand, Inventory, and Projected Additional Sales respectively.
- 2) Beer Type Splicer – Enables the user to cycle through the charts to display each type of beer independently.
- 3) Can/Keg Ratio- Gives the user the ability to change the ratio of cans or kegs required.
- 4) Buttons – VBA coded buttons enable the ability to Refresh, Schedule Conditioning Tanks, open forms to Add New Products to Enter Monthly Sales and Production Data.
- 5) Product Templates – Defining the format of cells needed to input brews into the schedule.
- 6) Forecasted Growth – Gives the user the ability to manually add organic growth to the forecasted demand.
- 7) Schedule – Displays the schedule of each brew, allowing the user to plan brewing operations to meet demand.

Details of Design

The Brew Management Tool provides an easy solution for Lone Oak Brewing co. to manage and schedule brews. In addition to inputting sales and production data, the tool will demonstrate better forecasting to predict future demand.

The tool was designed with close client consultation to maximize efficiency while being implemented into their business operations. With user-friendliness a major focus, the tool has been designed with the following features for ease of use:

- Intuitive buttons to streamline data.
- Manual capability to override errors based on brewing process variability.
- User inputted brew scheduling.
- Efficient Year-End rollover capabilities.
- Customized to requirements of client.
- Effective sales, production, and inventory data tracking.

Demand Forecasting

To avoid future stockouts and to meet growing demand, a forecasting component has been built into the tool to predict and display required inventory levels on a monthly basis.

Current Forecasting

Using the sales data collected since opening in late 2019, the following formula was used to forecast demand:

$$D_{bm(y+1)} = \frac{\sum_{y=1}^n D_{bmy}}{n} \text{ if } D_{bm1}$$

$$= 0 \text{ use } D_{bm2}, \text{ if } D_{bm2} = 0 \text{ use } D_{bm1}$$

Future Forecasting

As the COVID-19 Pandemic has skewed past data, a weighted moving average will be used to predict demand once more post-pandemic data becomes available. The formula is as follows:

$$D_{bm(y+1)} = \frac{D_{bm(y-1)} + wD_{bmy}}{1 + w}$$

Key Outcomes

- Low cost compared to existing industry competitors
- Customized to meet needs of client
- Future expansion capabilities
- Ability to prepare inventory for future demand
- Tested and approved for use at Lone Oak Brewing Co.

Conclusion

Utilizing the Brew Management Tool demonstrated the ability for Lone Oak Brewing Co. to produce more than 100% of previous year's sales, as seen in the table below.

Beer	Average % Increase (Annual)
Fixed Link	103%
Boat Traffic	754%
Yankee Gale	108%
Hollywood	197%
South Shore Sour	252%

Note: Boat Traffic has recently been introduced as a flagship as of 2022 and will be brewed year-round.

References

- Jared Murphy – CEO, Lone Oak Brewing Co.
- Spencer Gallant – Head Brewer, Lone Oak Brewing Co.
- Dillon Wight – Sales Office, Lone Oak Brewing Co.
- Henry Pedro – Head Brewer, Boxing Rock Brewing Co.
- Scott Flemming – Dalhousie University
- Sandra MacAulay-Thompson – Dalhousie University
- Dr. Colleen Dewis – Dalhousie University
- Dr. Pemberton Cyrus – Dalhousie University