E-Commerce Performance Forecasting and Digital Marketing Optimization

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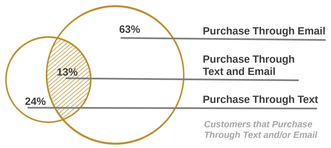
ABSTRACT

This study develops a data-driven marketing strategy playbook and dashboard for a small, but rapidly growing (approx. $6.5M revenue in 2021) e-commerce premium candle brand. There is a potential for growth as the brand continues to leverage data-driven decision-making. Observing the needs of the company, three key opportunities where analytics can be integrated were identified: **(1) forecasting future growth, (2) optimizing marketing spending, and (3) improving day-to-day metric benchmarking and website operations**. The analysis included growth forecasts of the brand in terms of product type, revenue generation, and revenue by marketing channel. The research also includes ways to optimize digital marketing efforts to reduce spending. The results were synthesized into a marketing strategy playbook for 2022 and a dashboard was developed to enable the brand to generate future insights.

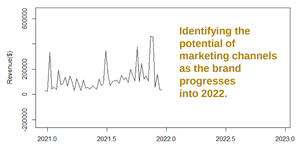
INTRODUCTION

The Direct-to-Customer (DTC) space is exploding among both small and established companies. The intent to buy DTC brands is rapidly increasing—79% of those familiar with these brands say they plan to increase their DTC purchases in 2021 (DeLaite, 2021) and 52% of the people surveyed predicted that 20% or more of their 2021 purchases would come from DTC brands. Considering the large number of paid and organic channels that are available across various social media platforms, it becomes highly imperative to formulate an optimized data-driven digital marketing strategy for a DTC business to help them increase their bottom lines and capitalize on the projected surge of growth. The brand can evaluate the projected future growth of their marketing channels and seek to reduce any inefficiencies as they market and promote their products.

Opportunity for Optimization



Opportunity to Predict Future Growth



LITERATURE REVIEW

Time Series Forecasting

For optimization of the digital marketing channels, studies have been conducted on various time forecasting models such as

- Autoregressive Model (AR)
- Moving Average Model (MA)
- Autoregressive Moving Average (ARMA)
- Seasonal Autoregressive Integrated Moving Average (SARIMA)

which can be used to forecast future revenue streams (Yu et al. 2020). ARIMA, Linear Decomposition, Quadratic Decomposition, and Naïve Models were used in this study.

The accuracy for Time Series Forecasting for optimization models can be verified through exploiting robustness, trend modeling and stationarity, method model selection, and multivariate extensions (Fildes & Makridakis, 1995). The techniques check the accuracy by comparing and eliminating the differences between theoretical and empirical evidence of data. Based on the successful use in literature (Li et al. 2018), the MSE accuracy metrics were deployed in this study.

Optimizing Digital Marketing (Reducing Unnecessary Cost):

Multichannel marketing techniques can increase the visibility of the DTC brand and consumer engagement with content, but can increase unnecessary spending when brands present unnecessary channels to certain consumers. For example, if one consumer receives both text and email campaigns, and only engages with the email campaigns when making purchases, the texts may be a superfluous cost.

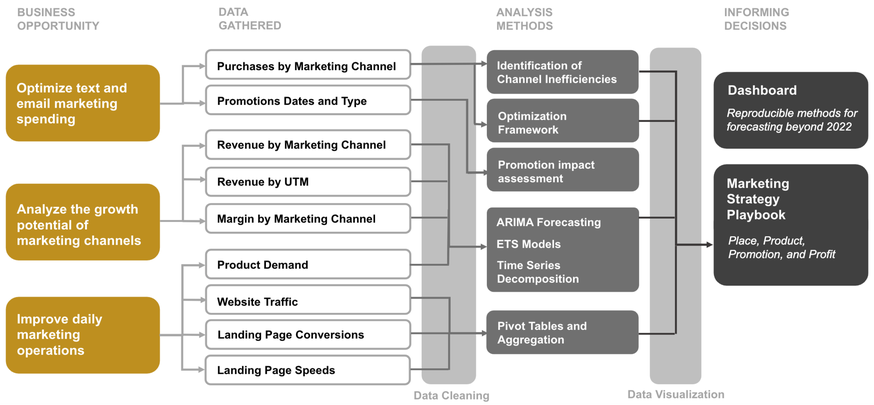
According to the study by Guo et. al (2018), businesses may not realize the potential efficiencies of reducing ads because this may lower the advertising revenue generated, which is a common metric for marketing performance. Instead, businesses can evaluate the net gains, evaluating increased transactional revenue against decreased ad revenue. Our study focused on marketing cost savings.

RESEARCH OBJECTIVES AND METHODOLOGY

1 How can we optimize the brand's marketing channels to reduce inefficiencies?

2 What is the future growth potential in terms of revenue by marketing channel and revenue by UTM?

3 How should the brand plan its marketing activities for 2022?

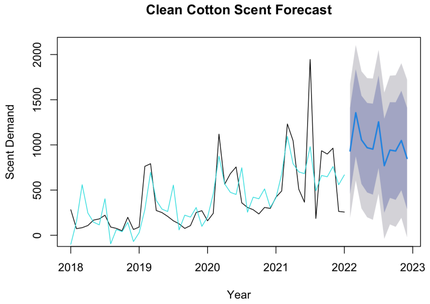


STATISTICAL RESULTS

Forecasting the Demand of Candle Scent and Product Type

Demand of the brand's candle scents and product types (individual 16oz candles, bundles, wax melts, and more) were forecasted to help the marketing team identify which scents and product types to promote in their marketing materials.

The plot to the right of "Clean Cotton" is one example. Scent demand is the count of products that contain the scent.

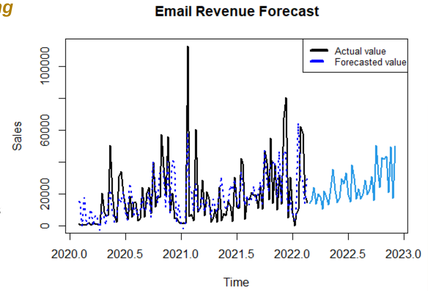


Revenue by UTM Forecasting

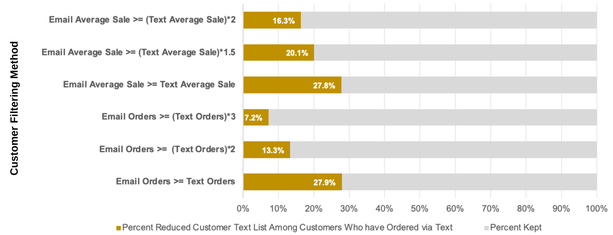
UTM (Urchin Tracking Module) represents the **medium** through which customers have access to the e-commerce website, such as:

- **Email**
- Text
- Instagram
- Facebook
- Direct

The revenues for the 20 Top UTMs with the highest cumulative revenue were forecasted.



Optimization of Text and Email

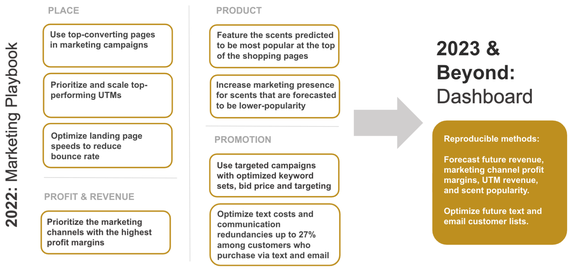


Text and email communication channels were optimized based on different ratios. The results show that this optimization can lead to up to **27% reduced customer texts among those that have purchased via text and email,** which translates to lower communication costs.

EXPECTED IMPACT

The results from the project have the following potential impact:

1. **Optimize marketing spending:** The brand's marketing team can scale the top performing UTMs to better allocate marketing spending.
2. **Boost top scents:** By using the identification of which scents to prioritize in marketing materials that month (top-selling and bottom-selling), the marketing team may be able to boost sales.
3. **Increase customer engagement:** The brand can increase customer engagement with their marketing content by sending advertisements at the identified ideal times of day.
4. **Increase conversions:** The brand can promote the landing pages with the highest conversion rates and reduce overall bounce rates.
5. **Reduce costs:** Optimizing Text and Email strategies helps to reduce text costs up to 27% among customers that have purchased via text and email.
6. **Forecast future years:** The dashboard created provides the company with a means to continue communication optimization for new customers and forecasting based on the scents, UTMS, and overall revenue.



CONCLUSIONS

- **Reproducible methodologies:** The aim throughout the project was to help the client use analytics for better decision making. Therefore, the techniques and methods were developed to ensure that the client could effectively and efficiently use the forecasting models in the future.
- **Historical data and accuracies:** The amount of historical data available determines the accuracy of the predictions. With every additional period of historical data, the confidence level of the models we developed for forecasting will improve.
- **Looking forward:** Effectively managing and utilizing data is imperative for growing DTC e-commerce businesses. Simplifying the analytical process with effective dashboards helps businesses contextualize data better and improve decision making.

ACKNOWLEDGEMENTS

We would like to thank Professor Matthew Lanham and our industry partner for this opportunity, their guidance, and support on this project.