Executive Memo: Strategic Sales Forecasting for Crafted Cones

Decision Summary
Crafted Cones, in its inaugural year, has demonstrated strong growth potential but faces challenges common to new businesses, like limited historical data and informal tracking of sales and resources. To address these gaps and position the company for sustainable success, we recommend adopting a robust time-series sales forecasting model to predict sales growth potential. This approach will empower leadership to make data-driven decisions on staffing, inventory, and marketing, and to manage the uncertainties of a dynamic market proactively. For a young company like Crafted Cones, accurate sales forecasting is a strategic necessity.

Analysis and Approach
Our team analyzed the first year of sales data, which was manually tracked through inventory and staffing logs. We cleaned and structured the data, then evaluated several forecasting methods, including SARIMA, Naive, and Prophet. We cleaned and structured the data, then evaluated several forecasting methods, including SARIMA, Naive, and Prophet. Our findings indicate that the Naïve model is currently the best-performing model, with a MAPE of 7.9%. Using rolling-origin backtesting, it was observed that Prophet modelling exhibited greater volatility than SARIMA modelling, and the advanced model may not perform well with sudden seasonal changes.

Key findings:

- Clear seasonality was identified, with peak sales in summer and lower volumes in winter.
- Visualizations and back testing validated the model's accuracy and highlighted periods of risk and opportunity.

Future Options for Crafted Cones
Looking ahead, Crafted Cones has several strategic options to further strengthen its operations, including transitioning from manual tracking to a CRM to improve data quality, enable real-time insights, and support more sophisticated analytics; using forecasting to test the impact of new products, pricing strategies, or marketing campaigns before committing resources; enhance forecasts by incorporating weather patterns, local events, or competitor activity; regularly retrain and refine forecasting models to maintain accuracy**;** and start with pilot programs for CRM and analytics tools, scaling up as the organization grows and staff become more comfortable with new systems.

Risks and Limitations

- The current sales data is manually tracked, which may introduce errors and limit model precision.
- The analysis is based on only 12 months of sales data, which may limit the robustness of the findings.
- Forecasts are based on historical patterns and may not fully capture unexpected events or rapid market changes.
- Implementing new technology (CRM, analytics platforms) will require investment and staff training.

Next Steps

- Pilot the forecasting model over the next quarter, closely monitoring forecast accuracy and operational outcomes.
- Begin phased CRM implementation to improve data capture and support ongoing analytics.
- Establish key performance indicators (KPIs) such as forecast accuracy, staffing efficiency, inventory turnover, and customer satisfaction to measure progress.

Conclusion
By embracing advanced sales forecasting and investing in better data infrastructure, Crafted Cones can move from reactive to proactive management. This will not only optimize day-to-day operations but also lay the groundwork for scalable, long-term growth.

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Links

- GitHub Repository:

  https://github.com/h-schroeder-coder/Simplified_MSBA_Analytics_Methods_Frameworks_Project.git

- Reproducible Notebook (in GitHub Repository):

  https://github.com/h-schroeder-coder/Simplified_MSBA_Analytics_Methods_Frameworks_Project/blob/45af281c644045bc9bb6e1c29ad56e7604ef8c0a/analytics_methods_frameworks_project.ipynb

- PDF of Slide Deck (in GitHub Repository):

  https://github.com/h-schroeder-coder/Simplified_MSBA_Analytics_Methods_Frameworks_Project/blob/29c373bd354c5dbc5896494fa1837f6c638de958/MSBA_Analytics_Methods_%26_Frameworks_Project_Presentation.pdf

- Executive Memo (in GitHub Repository):

  https://github.com/h-schroeder-coder/Simplified_MSBA_Analytics_Methods_Frameworks_Project/blob/e33b6c6c3253cf13d259f7c98eed1019f0e43340/MSBA_Analytics_Methods_%26_Frameworks_Executive_Memo.pdf

- Group Agreement (in GitHub Repository):

  https://github.com/h-schroeder-coder/Simplified_MSBA_Analytics_Methods_Frameworks_Project/blob/54a32168aff6bea075354d36f4312b3596ea1f26/MSBA_Analytics%20Methods%20%26%20Frameworks_Group_Project_Agreement.pdf

Quantic MSBA Analytics Methods & Frameworks Project Team:

- Hannah Schroeder
- Carrie Feltkamp
- Breanna Rai