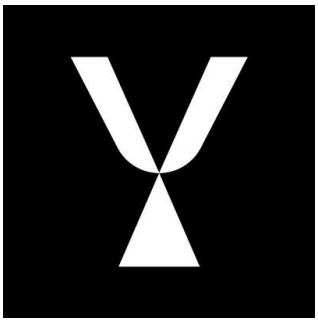
Operations Insights

Client: SkyFi



Prepared by:

Paul O’Neill

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Title: Operations Insights and Data Exploration Using Metabase and Snowflake

Overview

The goal of this document is to summarize the findings from my analysis of the orders dataset provided by SkyFi for the Data Analyst Final Take-Home Assignment. This dataset contains details on the customer, order status, geographic focus, order placement platform, image specifics, costs, and other related factors.

Insights that could potentially be gained from the data include understanding the success rate of order completion, the profitability of orders by provider, frequently imaged locations, delivery times, usage patterns of order placement platforms, order types distribution, and cost trends over time.

Exploratory Data Analysis

Our first order of business will be to perform some preliminary data analysis and understand the individual data contained in each column. There are quite a few columns to analyze in the data (22 to be exact), so let's describe some of the key columns we'll focus on and what they represent.

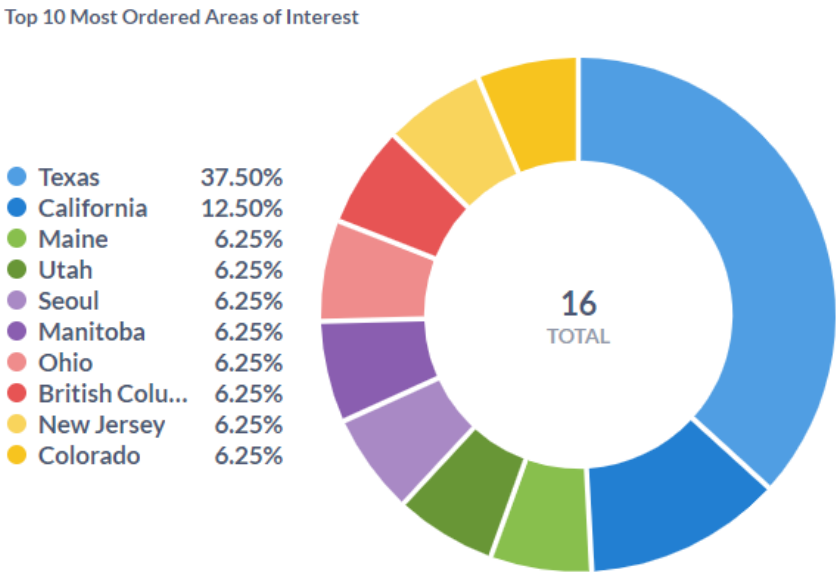
- **CREATED_AT:** The timestamp when the order was made, useful for analyzing trends and peak times.
- **ITEM_TYPE:** Describes the order category ("ARCHIVE" or "TASKING"), key for understanding product demand.
- **ITEM_STATUS:** Denotes order status ("COMPLETE" or "FAILED"), offering insights on operational efficiency.
- **PROVIDER:** Identifies the imaging service provider, useful for provider performance analysis.
- **ITEM_PRICE:** Shows the price of the order, crucial for revenue calculation and pricing strategies.
- **PROVIDER_COST:** Represents the cost to the provider, important for profit margin and cost analysis.
- **AREA_OF_INTEREST:** Indicates the image capture area, useful for geographical demand patterns.
- **ORDER_PLACED_ON_PLATFORM:** Reveals the platform used for ordering, guiding platform-based marketing and development.
- **TIME_TO_DELIVER_IMAGE:** Time from order to delivery, important for assessing service speed and efficiency.
- **TASKING_WINDOW_START_DATE:** Start date of the tasking window, beneficial for workload management and planning.

- **TASKING_WINDOW_END_DATE:** End date of the tasking window, aids in tracking order completion and planning.

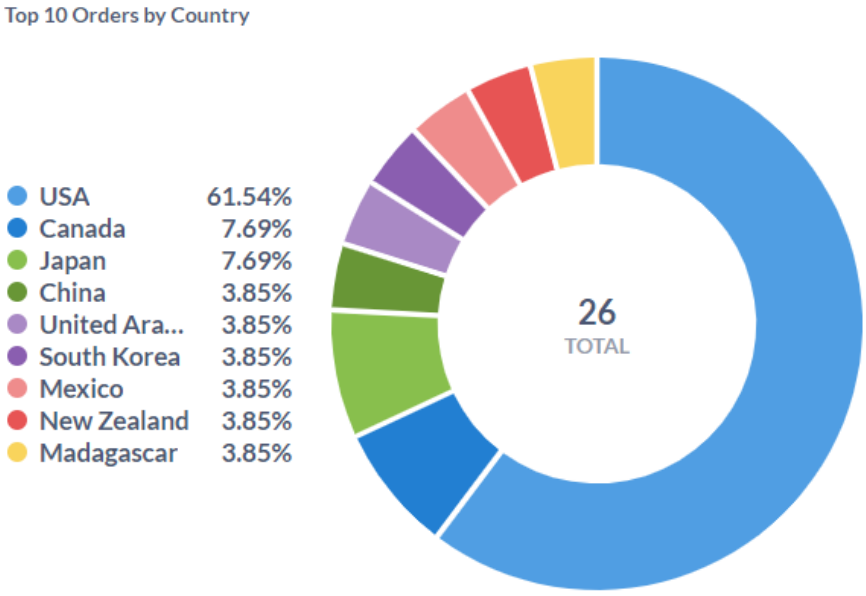
To start our analysis, a database was created in Snowflake, along with a schema matching the same format as the data provided. Once the table was filled with the orders data, a connection was established to a private Metabase server allowing users to query and visualize the data in an interactive dashboard found here. We will use this dashboard to answer the following questions:

What are the most popular areas of interest? Which countries do they reside in? How can we use this information to improve our product offering and marketing?

Let's take a look at the top 10 most common areas of interest below.



And now the top 10 most orders by country.



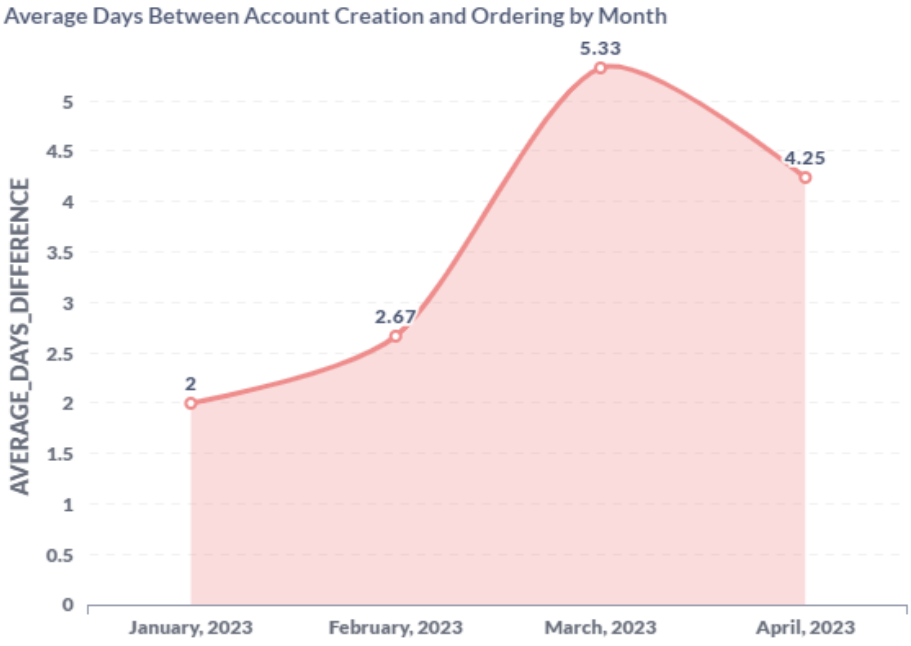
One thing that immediately jumps out is the concentration in the USA (Texas and California specifically) for the country and areas of interest.

We can use this information to optimize SkyFi's services and marketing strategies for users in Texas and California. For example, partnering with local agencies like the Texas Department of Transportation or California's Department of Forestry could offer specialized imagery for infrastructure planning or wildfire management. This could provide additional revenue channels and form key partnerships with big players in the area.

We could also do targeted marketing in these high-demand areas and could focus on prominent local industries. In California, campaigns could highlight sectors like tech and environmental conservation, while in Texas, energy and agriculture might be key. Through promotions on local digital platforms, sponsorships of relevant events, or initiatives in these sectors, SkyFi could bolster brand engagement and recognition in its most profitable markets.

Determine the average duration between user account creation and image ordering. Propose strategies to improve this metric, enhancing user experience and expediting sales transactions.

The average duration between user account creation and ordering is calculated by changing the “Created At” and “Tasking Window Start Date” columns to datetime format and calculating the difference between them in days.



There is not a ton of data to go on, as only 11 out of the 26 records were for tasking compared to archiving. As we can see, the average duration between account creation and ordering is

slowly creeping up over time. Some ideas for how this metric can be reduced can be found below.

Customer Onboarding and Education: Immediately after a user creates an account, we could implement an onboarding process that guides them through the services and functionalities available. This can include tutorials, demos, or interactive guides.

To make it even more engaging, we could gamify the onboarding process, where users earn points or badges for completing different learning modules. These points could be redeemed for discounts on their first order, encouraging them to make the purchase sooner.

Metrics such as engagement with onboarding content, time spent on learning modules, and conversion of these engagements to the first order would help provide measurable insights into the success of this approach.

Personalize User Experience: To make the user experience more personalized and dynamic, we can create a recommendation algorithm that takes into account a user's interest from their signup information, browsing habits, and engagement on the platform. This system can be used to provide users with suggestions for satellite images that match their requirements.

Specifically, as soon as a user creates an account, a personalized dashboard could greet them, showcasing satellite images based on the information they provided during the signup process. For example, if a user is interested in agriculture, we might highlight images of farming regions or agricultural trends.

The effectiveness of this strategy can be measured by monitoring the click-through rates on suggested images, conversion rates, and time to first order after these personalized suggestions are introduced.

Streamlined and Intelligent Search Interface: Given the extensive array of satellite images available, it's possible that customers might face decision paralysis or struggle to find the exact image they need. To address this, we can implement an intelligent search function that not only allows users to search for images based on keywords but also suggests relevant categories, themes, or even the most commonly searched images in their industry.

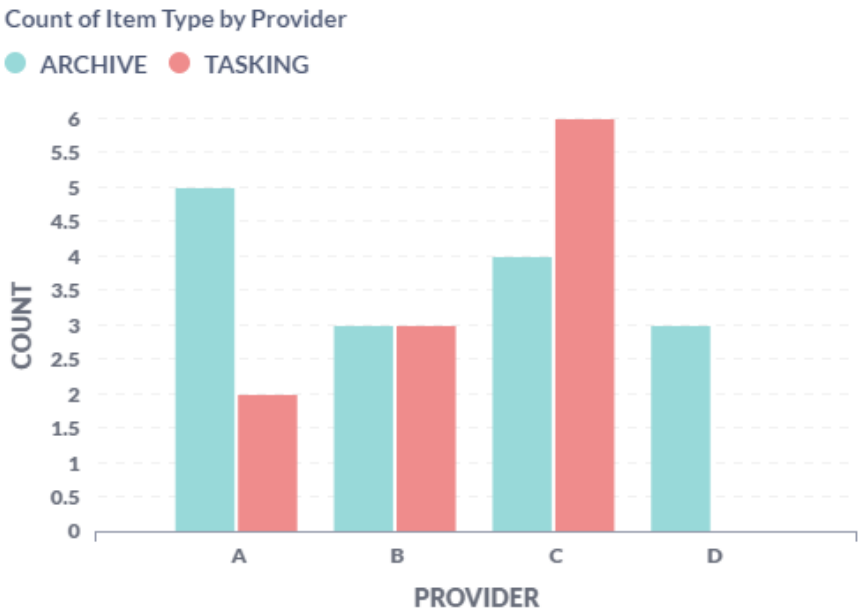
To make this possible, we can build a machine learning model that improves search accuracy over time. We can also include a feature that enables users to filter search results based on different parameters such as date, location, resolution, etc.

By improving the search function, we can expedite the decision-making process, thereby reducing the time between account creation and the first order. The success of this approach can be tracked by the decrease in time from account creation to first purchase and an increase in user satisfaction scores.

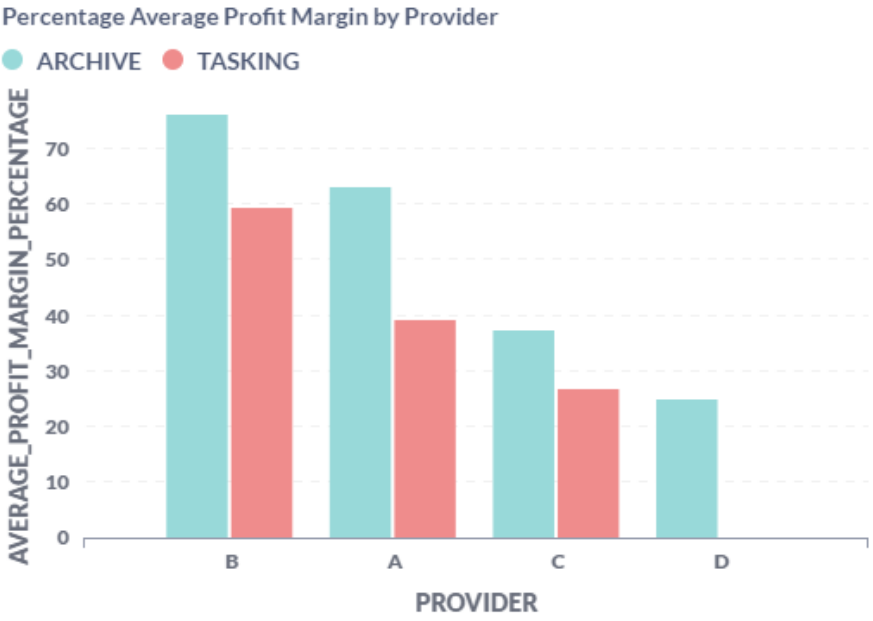
Evaluate whether the SkyFi team should maintain existing collaborations with all imagery providers or strategically reassess these partnerships.

To analyze the performance of partnerships with imagery providers, we'll want to evaluate a few key metrics, such as the quantity of orders by each provider, the average profit, and the average profit margin by each provider.

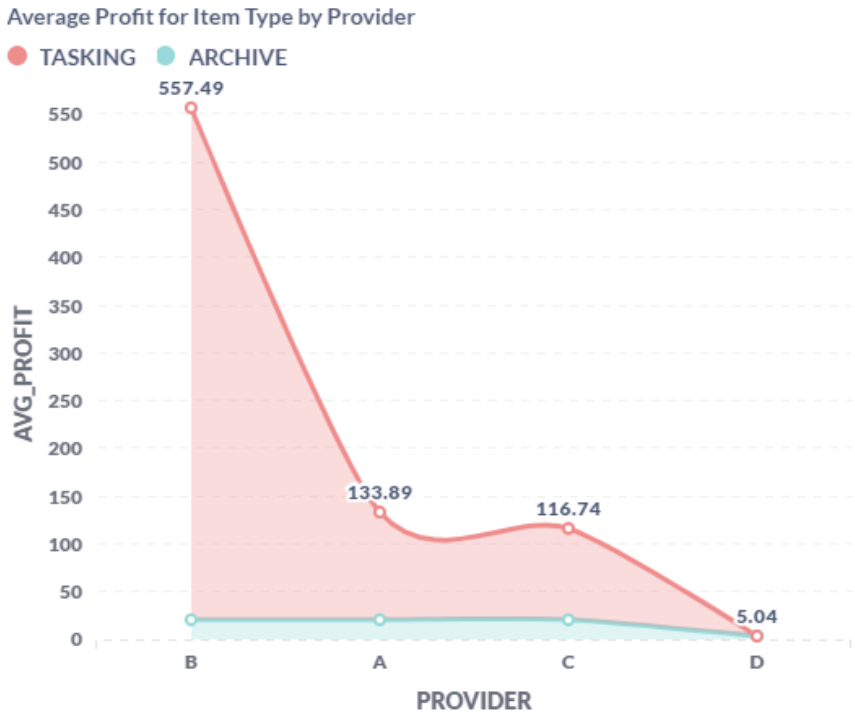
Our first step will be to break down the order quantity by item type for each provider.



Analyzing this in combination with the average profit margin by provider can help us determine which are our most successful partnerships.



Next let's look at the average profit for item type by provider.



Looking at the charts above, we can see that provider C is our most frequent provider, with A and C close behind, while provider B appears to be the most valuable partner when it comes to tasking items, offering significantly higher average profit ($535.43) compared to the other providers (A and C).

Some recommendations for assessing strategic partnerships would be:

Increasing Tasking Items: SkyFi could provide more focus, on the internal platform or through marketing efforts, to increase the percentage of tasking vs archiving orders. Maintaining the relationship with provider B, while re-routing tasking items from other providers to provider B, should increase profitability due to the large average profit and profit margins.

Reassess Provider D Partnership: SkyFi could consider reassessing their partnership with Provider D entirely if it's not feasible for them to provide tasking items and if the profitability of archiving items doesn't improve. There needs to be some forward progress or benefit through risk management by maintaining this partnership.

Gather Additional Data: Conduct additional analyses to assess the reliability, quality, and customer satisfaction associated with each provider. Consider factors beyond profitability, such as customer feedback and service level agreements, and use this information to make more informed decisions about strategic partnerships.

Conclusion

In conclusion, the analysis of the operations dataset provided valuable insights into various aspects of SkyFi's business. Key findings included a concentration of orders in Texas and California, the average duration between user account creation and ordering, and the performance of partnerships with different imagery providers. These insights provide a foundation for making strategic operational decisions and improving SkyFi's business.

Recommendations

Please find below some recommendations for the future for how SkyFi can use the above analysis to make actionable decisions based on the operations dataset that will benefit the long-term vision of the company.

Geographic Focus: Optimize services and marketing strategies in high-demand areas like Texas and California. Explore partnerships with local agencies or industries to offer specialized imagery services and establish SkyFi as a trusted provider. Target promotions on local digital platforms and sponsor relevant events to enhance brand engagement and recognition in these profitable markets.

Provider Partnerships: Maintain a strong collaboration with Provider B, who demonstrates the highest profitability for tasking items. Consider reallocating tasking orders from other providers to maximize profitability. Reassess the partnership with Provider D if it does not contribute to profitability or show progress in archiving items.

User Experience Improvement: Implement a streamlined onboarding process to guide new users and educate them on available services. Personalize the user experience through a recommendation algorithm that suggests relevant satellite images based on user interests. Enhance the search interface with intelligent search capabilities to expedite decision-making. These improvements will reduce the time between account creation and the first order, leading to higher customer satisfaction and increased conversion rates.