Report: SKU Profitability and Usage Analysis for 2022

1. Introduction

In 2022, SwiftHaul Logistics Packaging embarked on a comprehensive analysis of its SKU (Stock Keeping Units) portfolio, focusing on usage and profitability. The objective of this report is to identify inefficiencies within the packaging portfolio and provide actionable insights to optimize both performance and customer satisfaction. By leveraging data from SwiftHaul Logistics's Warehouse Management System (WMS), the analysis evaluates SKU usage patterns, associated costs, and revenues, along with customer-specific behaviors and seasonal trends. The ultimate goal is to ensure that SwiftHaul Logistics Packaging can streamline its offerings and boost profitability across its product range.

2. Methodology

Data for the analysis was retrieved from SwiftHaul Logistics's Warehouse Management System (WMS). The following metrics were analyzed:

- **Total Quantity Used**: The number of units used for each SKU.
- **Total Revenue**: Calculated as the unit price multiplied by the total quantity used.
- **Total Cost**: Calculated as the unit cost multiplied by the total quantity used.
- **Profitability**: Defined as the difference between total revenue and total cost.

Data cleaning was conducted to ensure the removal of duplicate records, and mid-year pricing and cost adjustments were factored into the analysis. Additionally, usage by client and monthly trends were analyzed to understand which SKUs are favored by specific clients and how their performance fluctuates throughout the year.

3. Analysis

Profitability and Usage Analysis

In this section, we analyze the profitability and usage of each SKU for 2022. Below is the table showing the total quantity used, revenue, cost, and profitability for each SKU.

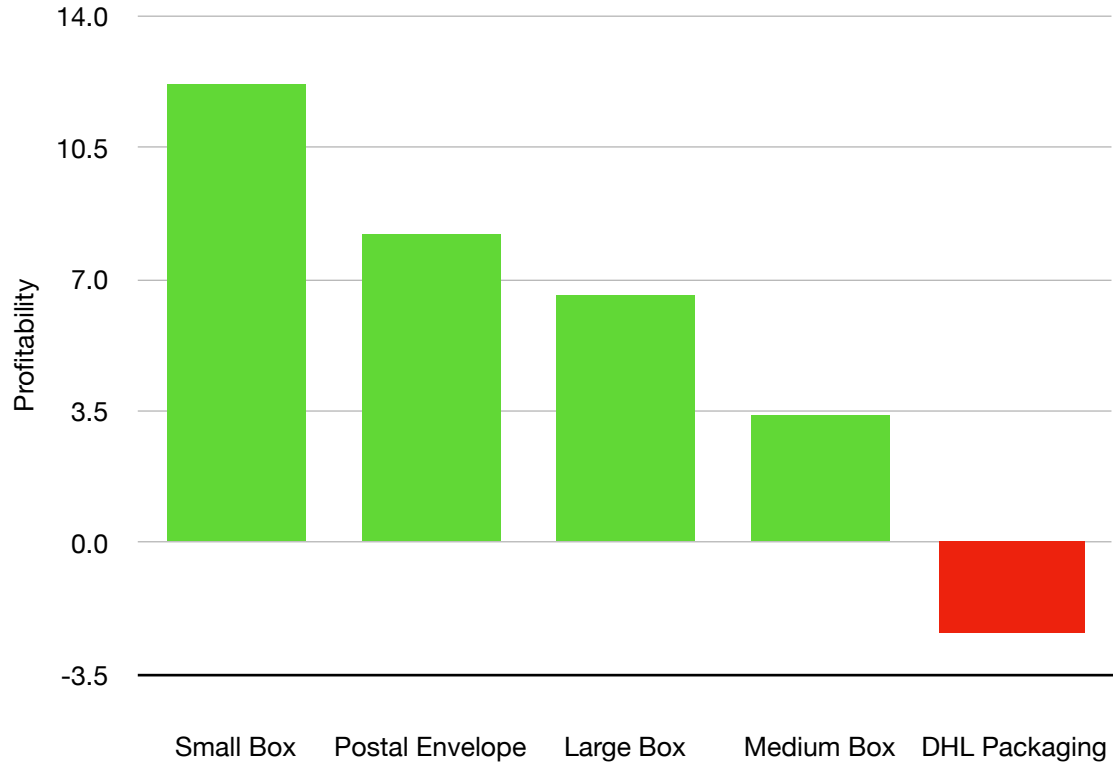
Table 1: Profitability and Usage of SKUs in 2022

SKU_Name	Total_Quantity_Used	Total_Rever	Total_Cost	Profitability
Small Box	124.0	59.64	47.44	12.2
Postal Envelope	164.0	44.64	36.44	8.2
Large Box	6.0	11.8	5.2	6.6
Medium Box	26.0	17.85	14.45	3.4
DHL Packaging	433.0	138.74	140.86	-2.12

***All values are in EUR

This table highlights which SKUs are performing well and which are generating losses, providing a clear view of how usage translates into profitability.

Diagram 1: Profitability of SKUs in 2022

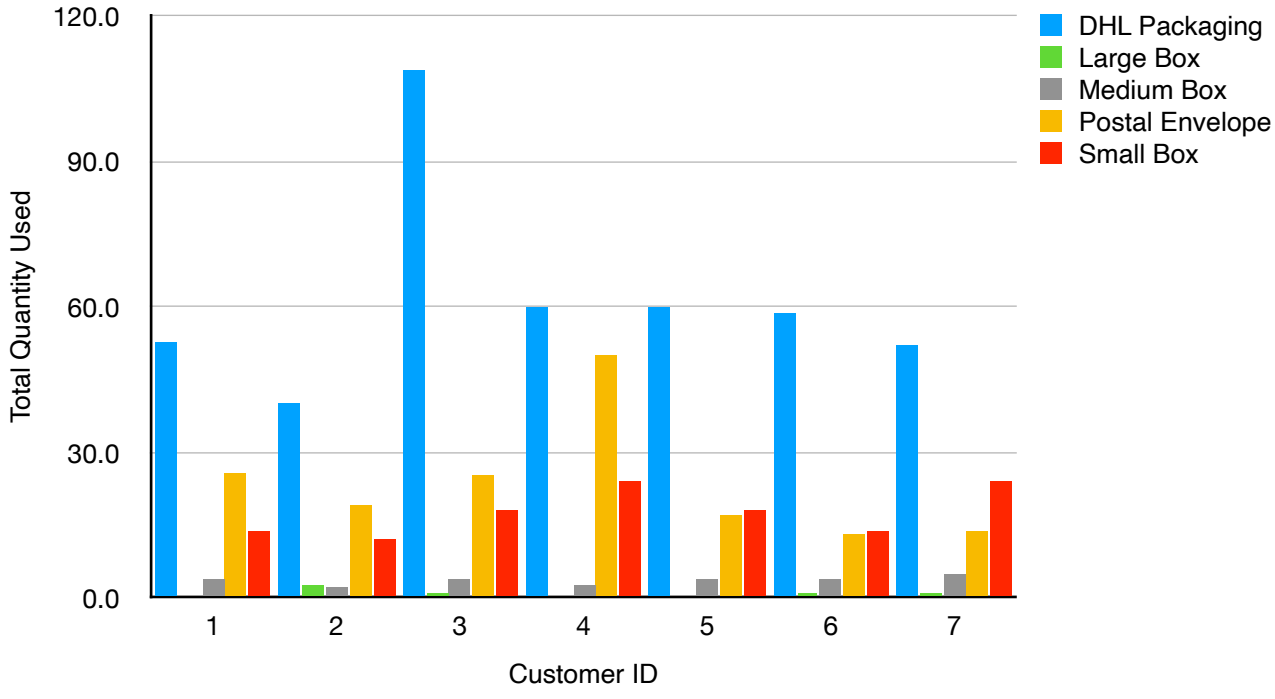


***All values are in EUR**

Usage per Customer by SKU

The following diagram illustrates how different clients use various SKUs. By identifying which clients prefer certain SKUs, we can better understand customer behavior and tailor packaging solutions accordingly.

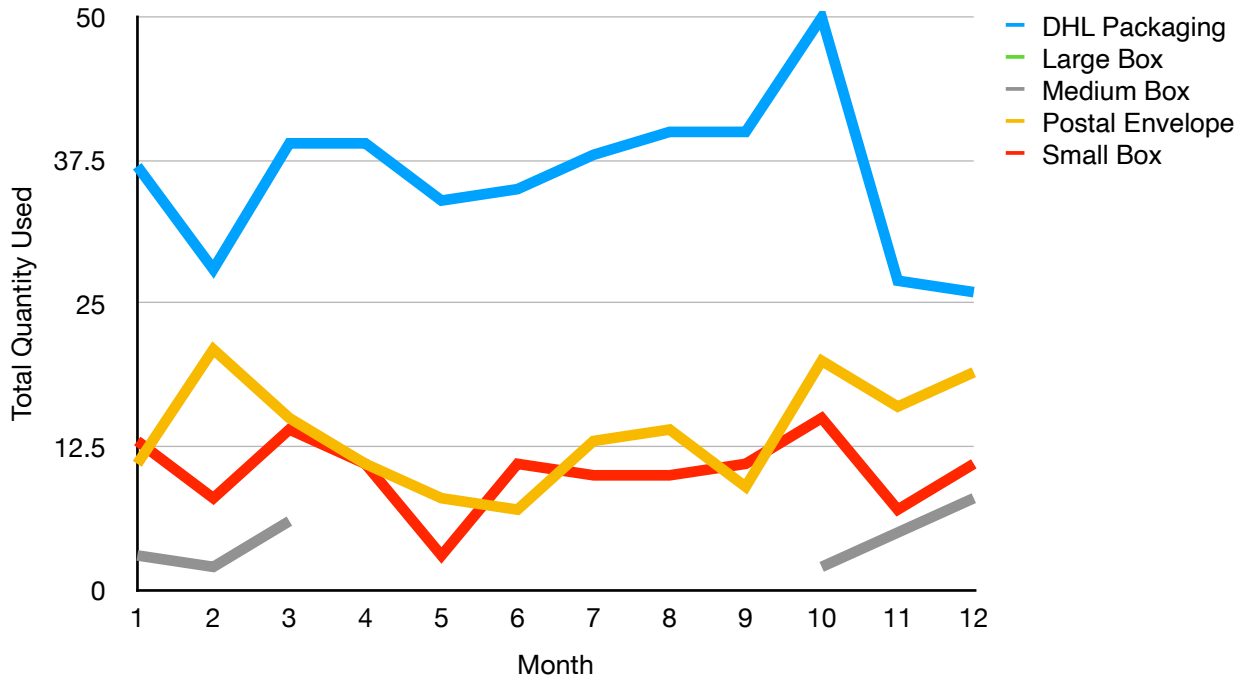
Diagram 2: Customer SKUs Usage Breakdown



Usage of Different SKU Types Across the Months

The next diagram tracks different SKU types across the months. By analyzing this data, we can identify peak demand periods and optimize stock levels accordingly.

Diagram 3: Usage of SKUs Across the Months



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4. Recommendations & Possible Actions

Based on our analysis, we have identified key actions to optimize our packaging portfolio and improve profitability. These recommendations are rooted in SKU usage and profitability, combined with insights into customer patterns and yearly trends.

1. **Reconsider DHL Packaging**

   Since DHL Packaging generates a consistent loss, we must take action to either improve profitability or reduce its impact. Possible Actions:

   - **Renegotiating Supplier Pricing:** We should consider renegotiating supplier pricing to reduce costs and improve the profitability of underperforming SKUs.
   - **Introduce Alternatives for DHL Packaging**: We can offer customers more cost-effective alternatives and encourage switching to packaging types that provide better profitability, such as Postal Envelope or Small Box.

2. **Focus on Profitable SKUs (Small Box, Postal Envelope and Large Box)**
   Small Box, Postal Envelope and Large Box are our high performers in terms of profitability, so we should make them the main focus of our promotions and marketing efforts.

   - **Target Specific Customers for Upselling:** By analyzing usage patterns, we can identify customers who could benefit from switching to these more profitable SKUs and offer them targeted promotions, discounts, or volume incentives.

   - **Seasonal Promotions for Large Box:** During months of higher shipping volumes (such as Q4), we should offer incentives or discounts to encourage increased use of Large Box, especially for customers who frequently use Small Box but might need more capacity.

3. **Usage per Customer by SKU**
   By including customer numbers in our analysis, we can better identify which clients are driving the most demand for each SKU, allowing us to develop more targeted strategies.

   - **Identify High-Volume Customers:** We should focus on customers like Customer ID 1 and Customer ID 3, who are heavy users of DHL Packaging and Small Box. By offering them volume-based pricing incentives or loyalty discounts, we can maintain their high level of usage while steering them toward more profitable SKUs like Small Box.

   - **Low-Usage Customers Targeted for Growth:** We can engage with Customer ID 2 and Customer ID 5, who have lower usage rates, by promoting cost-effective solutions like Postal Envelope or offering personalized packages to increase their overall usage of our SKU portfolio.

4. **Usage of Different SKU Types Across the Months**
   By analyzing SKU usage trends month by month, we can optimize inventory levels and marketing efforts to match seasonal fluctuations.

   - **Focus on Clients During Peak Usage Months:** For customers who significantly increase their usage in certain months (e.g., Customer ID 4 during Q4), we can provide seasonal discounts or pre-order options for SKUs like Medium Box and

Large Box to capture higher demand and lock in their orders before the peak period.

- **Encourage Small Box Usage Throughout the Year:** Some customers may rely on Small Box primarily during peak periods. By identifying their usage patterns (e.g., Customer ID 3), we can incentivize them to use Small Box consistently throughout the year by offering off-peak discounts or promotions.

5. **Implement Regular Reviews of SKU Performance**
   Regular monitoring will help us address inefficiencies promptly and ensure that our SKU portfolio remains optimized.

   - **Quarterly Customer-Specific Usage Reviews:** By performing quarterly analyses of SKU usage by customer, we can identify changing preferences and adjust our strategies to ensure that the most profitable SKUs are prioritized.

   - **Monthly SKU Performance Reviews by Season:** We should conduct monthly reviews focused on the performance of different SKU types across various months. This will help us identify emerging seasonal trends and ensure that stock levels and pricing are adjusted accordingly.

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5. Conclusions

The findings from this analysis provide valuable insights that can inform multiple departments within SwiftHaul Logistics Packaging. For the logistics team, better understanding SKU demand patterns allows for more efficient inventory management and cost reduction. The marketing team can use SKU performance data to develop targeted promotions, particularly for high-profit SKUs during peak seasons. The customer success team can tailor their engagement strategies to recommend more efficient and profitable packaging options, improving overall customer satisfaction. Lastly, stakeholders will benefit from enhanced profitability, cost savings, and an optimized product portfolio that supports long-term business growth.

These steps will ensure that SwiftHaul Logistics Packaging not only reduces inefficiencies but also maximizes profitability through data-driven decision-making.

6. Appendix

1. Profitability and Usage Analysis

This query calculates the total usage, revenue, cost, and profitability for each SKU based on data from SwiftHaul Logistics's Packaging System. It aggregates the data for the entire year 2022, providing a clear overview of how each SKU contributes to overall profitability.

```
WITH Year2022Prices AS
  (SELECT SKU_id,
          Unit_price,
          Valid_from,
          Valid_until
   FROM `tangential-box-405116.hive.Prices`
   WHERE (DATE(Valid_from) <= '2022-12-31')
     AND (DATE(Valid_until) >= '2022-01-01')),
     Year2022Costs AS
  (SELECT SKU_id,
          Unit_costs,
          Valid_from,
          Valid_until
   FROM `tangential-box-405116.hive.Costs`
   WHERE (DATE(Valid_from) <= '2022-12-31')
     AND (DATE(Valid_until) >= '2022-01-01'))
SELECT S.Name AS SKU_Name,
       S.Type AS SKU_Type,
       ROUND(SUM(PU.Quantity), 2) AS Total_Quantity_Used,
       ROUND(SUM(PU.Quantity * P.Unit_price), 2) AS Total_Revenue,
       ROUND(SUM(PU.Quantity * C.Unit_costs), 2) AS Total_Cost,
       ROUND(SUM(PU.Quantity * P.Unit_price) - SUM(PU.Quantity *
C.Unit_costs), 2) AS Profitability
FROM `tangential-box-405116.hive.Packaging_Used` PU
JOIN `tangential-box-405116.hive.SKUs` S ON PU.SKU_id = S.ID
JOIN Year2022Prices P ON PU.SKU_id = P.SKU_id
AND PU.Use_date BETWEEN P.Valid_from AND P.Valid_until
JOIN Year2022Costs C ON PU.SKU_id = C.SKU_id
AND PU.Use_date BETWEEN C.Valid_from AND C.Valid_until
WHERE EXTRACT(YEAR
              FROM PU.Use_date) = 2022
GROUP BY S.Name,
         S.Type
ORDER BY Profitability DESC;
```

2. **Usage per Customer by SKU Query:**

   This query provides insights into how each client is utilizing the different SKUs. It calculates the total quantity used per client and SKU, helping to identify high- and low-usage customers. This information can be leveraged to create targeted promotions and improve customer engagement.

```
SELECT pu.Customer_ID,
       sk.Name AS SKU_Name,
       SUM(pu.Quantity) AS Total_Quantity_Used
FROM tangential-BOX-405116.hive.Packaging_Used pu
JOIN tangential-BOX-405116.hive.SKUs sk ON pu.SKU_id = sk.ID
GROUP BY pu.Customer_ID,
         sk.Name
ORDER BY pu.Customer_ID,
         sk.Name;
```

3. Usage of SKUs Across the Months Query:

This query analyzes the usage and profitability of each SKU on a monthly basis for the year 2022. It allows us to track how SKU performance fluctuates throughout the year, revealing any seasonality or peaks in demand.

```
WITH MonthlyPrices AS
  (SELECT SKU_id,
          Unit_price,
          Valid_from,
          Valid_until
   FROM `tangential-box-405116.hive.Prices`
   WHERE DATE(Valid_from) <= '2022-12-31'
     AND DATE(Valid_until) >= '2022-01-01'),
     MonthlyCosts AS
  (SELECT SKU_id,
          Unit_costs,
          Valid_from,
          Valid_until
   FROM `tangential-box-405116.hive.Costs`
   WHERE DATE(Valid_from) <= '2022-12-31'
     AND DATE(Valid_until) >= '2022-01-01')
SELECT S.Name AS SKU_Name,
       EXTRACT(MONTH
               FROM PU.Use_date) AS MONTH,
       ROUND(SUM(PU.Quantity), 2) AS Total_Quantity_Used,
       ROUND(SUM(PU.Quantity * P.Unit_price), 2) AS Total_Revenue,
       ROUND(SUM(PU.Quantity * C.Unit_costs), 2) AS Total_Cost,
       ROUND(SUM(PU.Quantity * P.Unit_price) - SUM(PU.Quantity *
C.Unit_costs), 2) AS Profitability
FROM `tangential-box-405116.hive.Packaging_Used` PU
JOIN `tangential-box-405116.hive.SKUs` S ON PU.SKU_id = S.ID
JOIN MonthlyPrices P ON PU.SKU_id = P.SKU_id
AND PU.Use_date BETWEEN P.Valid_from AND P.Valid_until
JOIN MonthlyCosts C ON PU.SKU_id = C.SKU_id
AND PU.Use_date BETWEEN C.Valid_from AND C.Valid_until
WHERE EXTRACT(YEAR
              FROM PU.Use_date) = 2022
GROUP BY S.Name,
         EXTRACT(MONTH
                 FROM PU.Use_date)
ORDER BY MONTH,
         SKU_Name;
```