Case Study: E-Commerce Analytics for CPG Firms

The CPG company is currently dealing with several challenges that are hindering their ability to make informed decisions about estimating sales and selecting the optimal product assortment. One of the main issues they face is the decision of whether to offer free delivery or not. Additionally, the rise of new DTC and DNVB companies poses a threat as these companies receive high-quality customer purchase data, giving them a competitive advantage. Furthermore, the retailer's refusal to provide bifurcated data for online and offline sales for all the 100 SKUs presents a significant challenge that could impact the company's ability to optimize sales and profitability. Without accurate data, it becomes difficult for the CPG company to make informed decisions, hindering their ability to remain competitive in the marketplace.

(A) Estimating sales

After analysing the five methods used to predict sales, it was found that the Every 2nd method provided the closest estimates to the actual November sales (refer to Figure **A**). This method involves using the revenue from every second SKU to predict total sales. If SKU data is only available for 10 SKUs, then the Every 2nd method of predicting sales would not be possible. This method requires data from at least 20 SKUs to predict total sales by using the revenue from every second SKU and the same is for Every 5th method. Moving to next best method, Month Trend, it was found that this method also provided accurate sales predictions, with the total predictions from each SKU being more precise than using the growth rate directly from September to October. This is because the former method takes into account the change in revenue from each SKU, while the latter only considers the overall growth rate.

However, it is important to note that when using the Month Trend method or any other method to predict sales, it is advisable to obtain historical data for at least a year or more. This will help to check the reliability of the method as there may be seasonality and trends in the SKU revenues that are overlooked by using only September and October data. By analysing sales data over a longer period of time, we can identify patterns and trends that may not be immediately apparent and adjust our predictions accordingly.

(B) Optimising assortment for a new retailer

In choosing the right assortment from the calculations made, the SKUs that are common in both the revenue leaders and profit leaders for both One-time purchase and LTV could be added by giving more preference to the one-time purchase SKUs as they are the trend identifiers and can help in identifying products that are more in demand. The 11 common SKUs in Diagram **B** can we added to the assortment and then the top profit leaders from one-time purchase can be added. This could not be said with extreme confidence as there is no historical data to back this and this is a pilot. So it should be considered towards market research on product sales and the retailer capabilities.

In terms of additional details that should be considered while selecting the products should be competitive differentiation of a product. The manager should also consider the level of competitive differentiation of each SKU. SKUs that offer unique value propositions or have a competitive advantage over similar products in the market should be included in the assortment.

(C) Free Delivery Terms

Upon analyzing the cohorts, it becomes evident that Cohort 3 stands out as the most profitable option for the CPG company. This is especially true when taking into account the company's requirement of maintaining a minimum profit of $1 after having to pay $5.50 to the retailer for each free delivery. Cohort 3 generated an average revenue of $43 and was able to earn a profit of $6.910, which is significantly higher than the other cohorts. By offering free delivery to customers who spend $40 and above, the company can still earn a profit of $1.4 per transaction, making it the most optimal option.

Moreover, it would be beneficial for the company to consider the customer lifetime value (LTV) generated by the SKUs outlined in part B. Offering free delivery could increase the overall profitability from customers and lead to increased LTV. To further improve recommendations, the company should aim to collect additional data, such as customer demographics and purchasing behaviour, which can help identify target cohorts and create more personalized shipping terms for customers.

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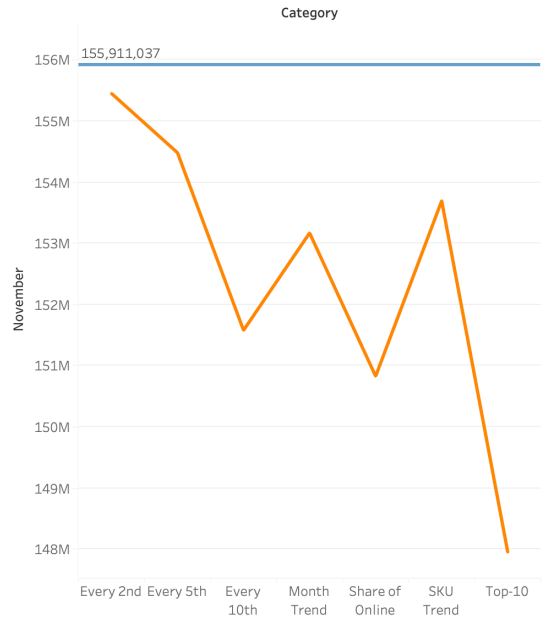
A. Method selection to predict sales



B. SKU selection

Revenue-based top-20:								
#	One-time Purchase Revenue Leaders	LTV Revenue			#	LTV Revnue Leaders	LTV Revenue	SKUs in both lists:
1	262	$ 36.45			1	188	$ 66.54	262
2	759	$ 26.19			2	399	$ 62.37	-
3	69	$ 55.40			3	63	$ 60.86	69
4	267	$ 22.66			4	69	$ 55.40	-
5	362	$ 34.48			5	558	$ 54.43	362
6	63	$ 60.86			6	831	$ 44.77	63
7	934	$ 19.07			7	878	$ 43.03	-
8	188	$ 66.54			8	78	$ 42.29	188
9	949	$ 26.31			9	328	$ 41.83	949
10	308	$ 20.58			10	617	$ 39.00	-
11	878	$ 43.03			11	262	$ 36.45	878
12	399	$ 62.37			12	362	$ 34.48	399
13	650	$ 17.53			13	27	$ 33.13	-
14	370	$ 22.10			14	538	$ 30.13	-
15	150	$ 23.37			15	949	$ 26.31	150
16	798	$ 21.13			16	747	$ 24.22	-
17	761	$ 20.07			17	900	$ 23.41	-
18	134	$ 16.50			18	150	$ 23.37	-
19	859	$ 21.50			19	865	$ 23.06	-
20	747	$ 24.22			20	216	$ 22.41	747
	Total:	$ 640.4	-23%				$ 787.5	
Profit-based top-20:								
#	One-time Purchase Profit Leaders	LTV Profit			#	LTV Profit Leaders	LTV Profit	SKUs in both lists:
1	267	$ 6.24			1	362	$ 6.60	-
2	934	$ 5.26			2	267	$ 6.24	-
3	761	$ 5.62			3	399	$ 6.13	-
4	798	$ 5.75			4	798	$ 5.75	-
5	308	$ 5.07			5	761	$ 5.62	-
6	759	$ 5.24			6	759	$ 5.24	-
7	650	$ 4.16			7	308	$ 5.07	-
8	134	$ 4.18			8	262	$ 4.89	-
9	362	$ 6.60			9	69	$ 4.80	362
10	262	$ 4.89			10	63	$ 4.54	262
11	713	$ 3.08			11	747	$ 4.02	-
12	269	$ 3.08			12	859	$ 3.57	-
13	859	$ 3.57			13	370	$ 2.89	-
14	553	$ 2.51			14	428	$ 2.78	-
15	747	$ 4.02			15	150	$ 2.67	747
16	370	$ 2.89			16	379	$ 2.48	-
17	865	$ 3.98			17	743	$ 2.09	865
18	428	$ 2.78			18	900	$ 2.06	-
19	881	$ 2.37			19	493	$ 1.62	-
20	150	$ 2.67			20	216	$ 1.39	150
	Total:	$ 84.0	4%				$ 80.4	

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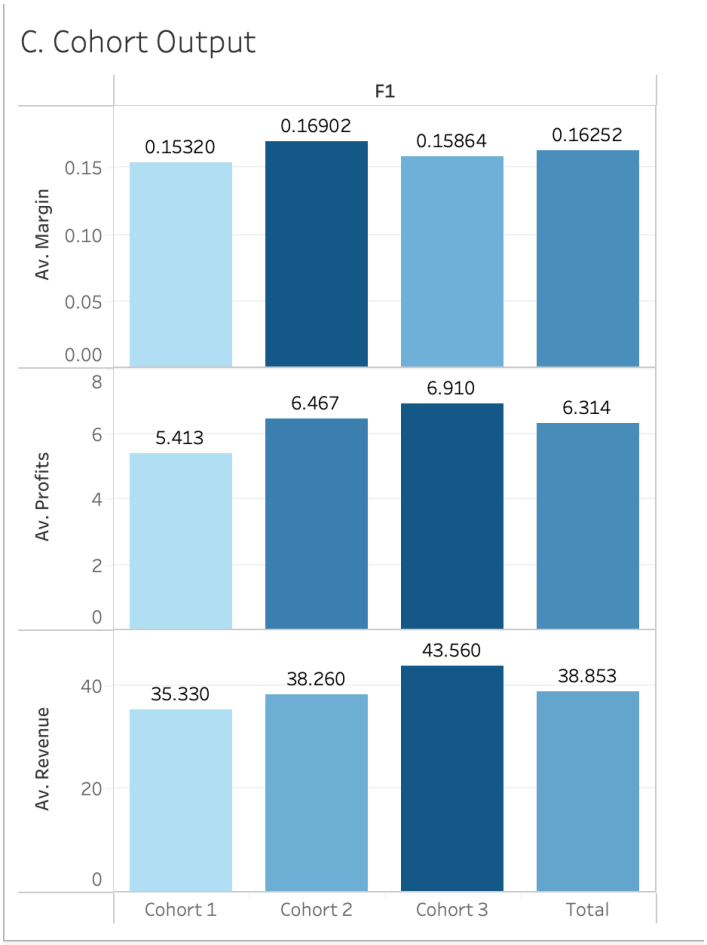

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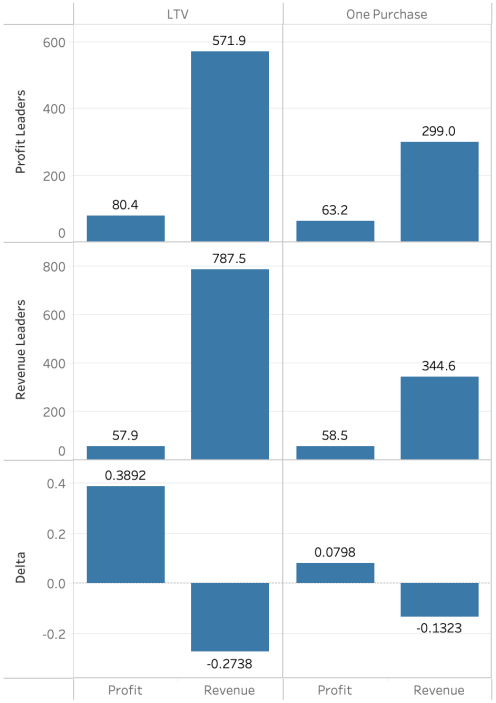
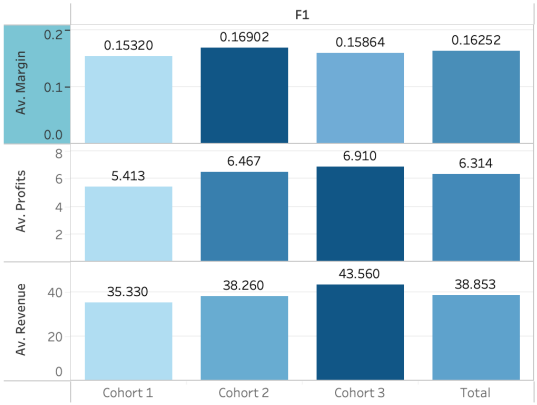
B. Revenue vs Profit leaders for LTV vs One Purchase



C. Cohort Output



A. Method selection to predict sales