

MILK STORE IN PERU

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DATA OPTIMIZATION

MsBA 1



AGENDA

PROBLEM & OBJECTIVES

Dataset overview and historical sales

SOLUTION TECHNIQUES

Data exploration – Inventory analysis, Demand insights, and Periodic sales

MARKETING STRATEGIES

Product analysis and summary





PROBLEM

The store manager tries to figure out the best strategy to sell products , develop promotion more effetely and manage inventory well

OPPORTUNITY

Be acquainted with the service level and simulate quantity demand, along with the profit

HISTORICAL SALES

WHOLE

Weekly unit sales:
2.9M

Average Gross
Sales:

\$154M

CHILD&INFANT

Weekly unit sales:
619K

Average Gross
Sales:

\$33M

SKIMMED

Weekly unit sales:
589K

Average Gross
Sales:

\$31M

SOY

Weekly unit sales:
77K

Average Gross
Sales:

\$4.1M

SOY&VEG

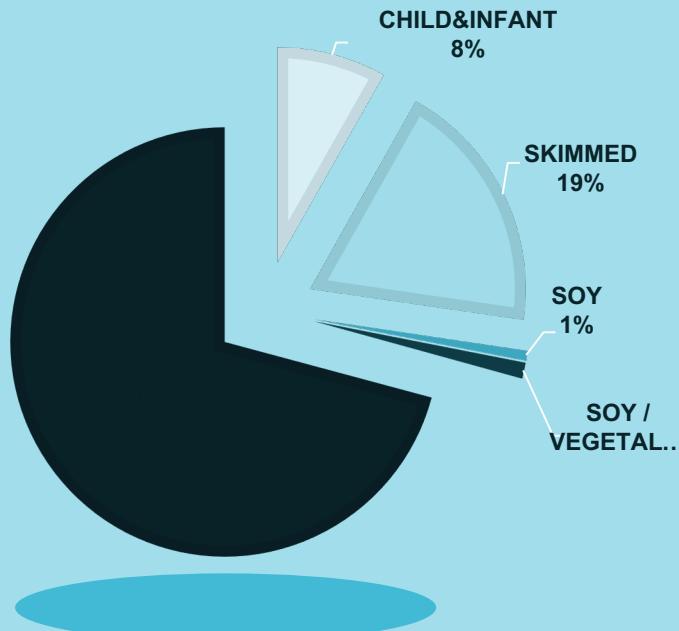
Weekly unit sales:
2.4K

Average Gross
Sales:

\$128K

MILK SHARE

BY SUBCATEGORY



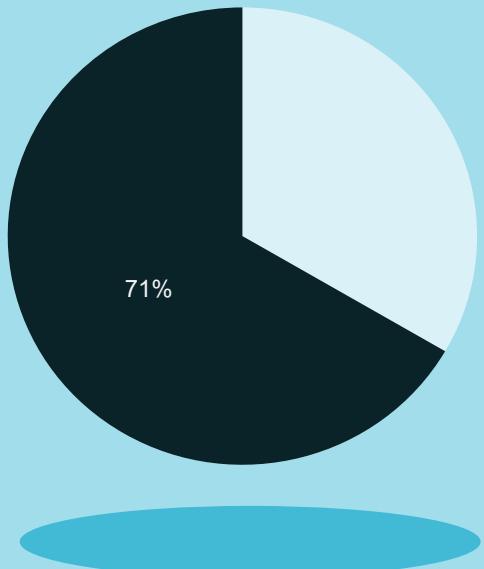
A few insights:

1. From 2016 to 2018, we can note that whole milk brand covers approximately 71% of the total profit.
2. Soy and Soy&Vegetal have the least share



Goods Classification

TOTAL SALES



27 SKUs

generated 71% of the
total sales

Whole: 19 Products

Skimmed: 4 Products

Child&Infant: 3 Products

Soy: 1 Product

Soy&Vegetal: None



ANALYSIS PROCESS

• Feature Engineering

Creation of new columns:

1. Total profit earned per SKUs
2. Total unit price and unit cost per SKUs
3. Promotional and regular unit price and unit sales, coupled with ratio of promotion and regular to total margin

Monte Carlo Simulation

Simulation to forecast quantity demanded, profit, service level



MONTE CARLO SIMULATION: Conditions



If Demand <= Inventory:

$$\text{Profit} = \text{Demand} * (\text{Price} - \text{Cost}) - \text{Unsold} * (\text{Inventory} - \text{Demand})$$

If Demand > Inventory:

$$\text{Profit} = \text{Inventory} * (\text{Price} - \text{Cost}) - \text{Shortage} * (\text{Demand} - \text{Inventory})$$



MONTE CARLO SIMULATION: Analysis on Inventory

	Subcategory	Item	Item Name	Q	Profits	Service
0	WHOLE	20100744	LAIVE EVAP LACTOSE FREE CARTON500GR 6PK	6036	7013.26	0.81
1	WHOLE	929548	GLORIA MILK UHT WHOLE CARTON1L 3PK	11615	5205.6	0.75
2	WHOLE	919288	GLORIA MILK UHT LACTOSE FREE CARTON1L 3PK	6801	6305.39	0.84
3	SOY	969700	SOY VIDA EVAPORATED CAN 400GR 6PK	7205	2496.78	0.75
4	WHOLE	990794	LA PREFERIDA MILK CHOCO BAG800ML	22891	6018.9	0.91
5	SKIMMED	919289	GLORIA MILK UHT SKIMMED CARTON1L 3PK	6436	4942.79	0.84
6	WHOLE	20053738	LAIVE EVAP VITAM CARTON500GR 6PK	4790	2536.43	0.74
7	WHOLE	20083790	GLORIA MILK UHT CHILD CARTON1L 3PK	3659	1498.12	0.78
8	SKIMMED	20099337	LAIVE EVAP SKIMMED CARTON500GR 6PK	3766	808.14	0.75
9	WHOLE	106833	GLORIA MILK EVAP WHOLE CAN 170GR 6PK	5358	2582.8	0.86
10	WHOLE	937320	LAIVE MILK UHT LACTOSE FREE CARTON1LT 4PK	1870	2850.16	0.86
11	WHOLE	20080361	BONLE LACTOSE FREE CARTON500GR6PK	7385	8042.87	0.77
12	WHOLE	94973	GLORIA MILK UHT WHOLE BAG946ML	15954	145.7	0.7
13	WHOLE	20107451	GLORIA MILK UHT ENTERA BAG946ML 3PK	1467	-196.2	0.3
14	CHILD&INFANT	20038671	NAN2 CONT FORMULA EVAP CAN 410G 6PK	1072	1419.68	0.79
15	WHOLE	949	GLORIA MILK EVAP WHOLE CAN 400GR	12796	855.78	0.71
16	WHOLE	919809	IDEAL CREMOSITA WHOLE CAN 400GR 6PK	3266	-1955.72	0.43
17	SKIMMED	919290	GLORIA MILK UHT SUPER SKIMMED CARTON1L 3PK	2027	997.54	0.8
18	WHOLE	77378	ANCHOR POWDER CAN800GR	1197	1485.72	0.8
19	CHILD&INFANT	20098819	LAIVE EVAP CHILD CARTON500GR 6PCK	1531	72.95	0.63
20	WHOLE	805070	LAIVE MILK UHT LACTOSE FREE CARTON1LT	3648	1888.05	0.86
21	WHOLE	28547	DANLAC MILK PASTEURIZED BOTTLE 900 ML	2176	163.91	0.62
22	WHOLE	998210	LAIVE BEB UHT CHOCOLATE CARTON180ML 6PK	2262	-173.17	0.57
23	WHOLE	967413	GLORIA MILK UHT LACTOSE FREEA BAG946ML	6358	805.36	0.73
24	CHILD&INFANT	106835	GLORIA MILK EVAP CHILD CAN 170GR 6PK	1724	282.52	0.67
25	WHOLE	20080359	BONLE WHOLE CARTON500GR6PK	4123	-1336.64	0.33
26	SKIMMED	94974	GLORIA MILK UHT SKIMMED BAG946ML	6741	373.07	0.65

MONTE CARLO SIMULATION: Analysis on Promotion

	Subcategory	Item	Item Name	Unit Cost	Promotion Price	Promotional Margin	Regular Margin	Total Margin	Impact on Margin
0	WHOLE	20100744	LAIVE EVAP LACTOSE FREE CARTON500GR 6PK	13.2	14.1	6419.4	35164.7	41584.1	15%
1	WHOLE	929548	GLORIA MILK UHT WHOLE CARTON1L 3PK	8.6	8.8	1415.8	18725.9	20141.8	7%
2	WHOLE	919288	GLORIA MILK UHT LACTOSE FREE CARTON1L 3PK	9.6	10.1	2767.6	26874.9	29642.5	9%
3	SOY	969700	SOY VIDA EVAPORATED CAN 400GR 6PK	8.3	8.6	1245.1	25612.3	26857.4	5%
4	WHOLE	990794	LA PREFERIDA MILK CHOCO BAG800ML	1.6	1.7	444.6	8643.2	9087.9	5%
5	SKIMMED	919289	GLORIA MILK UHT SKIMMED CARTON1L 3PK	8.6	9	2500	20569.4	23069.5	11%
6	WHOLE	20053738	LAIVE EVAP VITAM CARTON500GR 6PK	11.8	12.2	2789.5	26986.6	29776.1	9%
7	WHOLE	20083790	GLORIA MILK UHT CHILD CARTON1L 3PK	9.6	10.1	2521.6	23171.2	25692.8	10%
8	SKIMMED	20099337	LAIVE EVAP SKIMMED CARTON500GR 6PK	11.9	12.3	3030.3	27034.5	30064.8	10%
9	WHOLE	106833	GLORIA MILK EVAP WHOLE CAN 170GR 6PK	8.1	7.9	-94.1	17178.2	17084.1	-1%
10	WHOLE	937320	LAIVE MILK UHT LACTOSE FREE CARTON1LT 4PK	12.1	13.1	4651.1	42855.2	47506.3	10%
11	WHOLE	20080361	BONLE LACTOSE FREE CARTON500GR6PK	10	8.5	-4958.4	21953.1	16994.7	-29%
12	WHOLE	94973	GLORIA MILK UHT WHOLE BAG946ML	2.5	2.5	339.8	6179.6	6519.3	5%
13	WHOLE	20107451	GLORIA MILK UHT ENTERA BAG946ML 3PK	7.6	6.8	-995	20174	19179	-5%
14	CHILD&INFANT	20038671	NAN2 CONT FORMULA EVAP CAN 410G 6PK	19.7	20.2	395.5	56314.9	56710.5	1%
15	WHOLE	949	GLORIA MILK EVAP WHOLE CAN 400GR	2.5	2.4	-50.5	4692.7	4642.2	-1%
16	WHOLE	919809	IDEAL CREMOSITA WHOLE CAN 400GR 6PK	14	12.8	-6283.6	15721.5	9437.8	-67%
17	SKIMMED	919290	GLORIA MILK UHT SUPER SKIMMED CARTON1L 3PK	9.7	10.3	2234.1	29945.2	32179.3	7%
18	WHOLE	77378	ANCHOR POWDER CAN800GR	20.2	20.4	276.5	46394.9	46671.5	1%
19	CHILD&INFANT	20098819	LAIVE EVAP CHILD CARTON500GR 6PCK	13.8	14.1	1876.2	29019	30895.2	6%
20	WHOLE	805070	LAIVE MILK UHT LACTOSE FREE CARTON1LT	3.2	3.5	1140.7	14204	15344.7	7%
21	WHOLE	28547	DANLAC MILK PASTEURIZED BOTTLE 900 ML	3.9	3.9	10.8	18319.7	18330.5	0%
22	WHOLE	998210	LAIVE BEB UHT CHOCOLATE CARTON180ML 6PK	4.2	3.9	-527.3	21217.3	20689.9	-3%
23	WHOLE	967413	GLORIA MILK UHT LACTOSE FREEA BAG946ML	2.8	2.8	-26.2	7737.7	7711.5	0%
24	CHILD&INFANT	106835	GLORIA MILK EVAP CHILD CAN 170GR 6PK	9	9	-20.3	21410.2	21389.9	0%
25	WHOLE	20080359	BONLE WHOLE CARTON500GR6PK	10	8.6	-4486.1	24054.3	19568.3	-23%
26	SKIMMED	94974	GLORIA MILK UHT SKIMMED BAG946ML	2.5	2.6	433	6446.8	6879.8	6%

PROFITS

\$ 45,887.47

Actual Profit



\$ 71,851.10

Proposed Profit



INVENTORY RECOMMENDATIONS

1. Provide the following Inventory levels:

19 Whole Milk

1 Soy

4 Skimmed Milk

3 Child&Infant

0 Soy&Vegetal

2. Inventory cutoff: limit the products that aren't generating profit
3. Take note of the products that are best sold on a promotional period
4. Monitor that promotional products do not generate negative profits

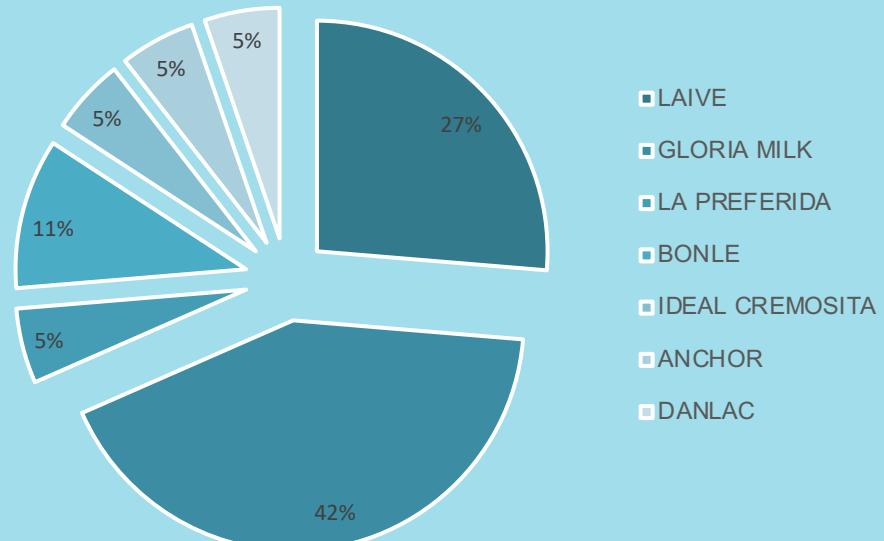


MARKETING STRATEGY RECOMMENDATION

- Strategic partnership with the whole milk providers
- Economies of Scale
- Lesser Cost



WHOLE MILK BRANDS' SHARE





THANK YOU!