

Demand planning & forecasting

Dairy products manufacturer

Generated an integrated demand forecast at retailer level based on historical data normalized for promotions, distribution, stock-outs and non-recurring events, and adjustments for future promotions & distribution changes

Dairy product manufacturing company needs demand forecasting and operations planning

Picture this...

You're looking for a long-term basis to revamp and manage their demand planning and operations planning processes by creating demand forecasting models, shipment scheduling tools and operations related models. Currently, there is no mature forecasting process, resulting in relatively low forecast accuracy, which causes production planning issues.

Additionally, sales, promotion, and stock-out data are not properly tracked, posing challenges for future growth planning.

You turn to Accordion.

We partner with your team to generate an integrated demand forecast at retailer level based on historical data normalized for promotions, distribution, stock-outs and non-recurring events, and adjustments for future promotions & distribution changes, including:

- 1) Forecasting for top-retailers using statistical tools based on historical data normalized for promotions, distribution, stock-outs and non-recurring events; Adjusting the forecast for future promotions & distribution changes
- 2) Generating 100% consolidated forecast which includes forecast for tail of retailers
- 3) Creating a model to overlay various corporate adjustments at a customer and category level on the consolidated forecast
- 4) Developing a model to generate the wholesale shipment schedule for the operations planning team based on the forecast after overlays

Your value is enhanced.

You have Accurate demand forecasts helped reduce raw material wastage during manufacturing process by 90%. Given the relatively low shelf life of the raw materials (2-5 days), this led to 5 pps increase in the overall margins. You have improved demand planning process, and the models helped the company improve their production planning and service levels

DEMAND FORECASTING AND OPERATIONS PLANNING

KEY RESULT

- 90% reduced raw material wastage
- 5 pps increase in overall margins

VALUE LEVERS PULLED

Demand forecasting and operations planning

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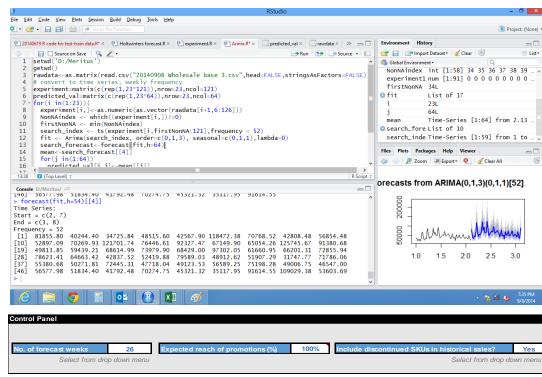
Statistical forecasting models for top retailers

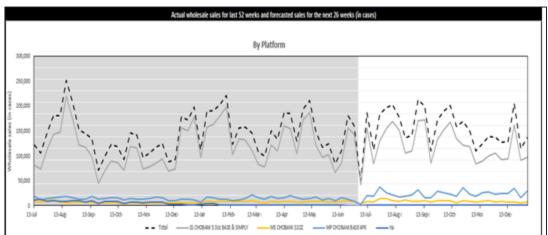
Objective

 Generate forecast for top-retailers using statistical tools and account for future promotions, distribution strategy and new product launches

Approach

- Normalized historical data for gaps, noise, out-ofstock, promotions, distribution changes and nonrecurring events to generate historical base demand
- Generated statistical base demand forecast using forecasting tools at a SKU and week level, applying Auto Regressive Integrated Moving Average (ARIMA) method
- Generated base demand forecast for new product launches based on user inputs
- Adjusted the baseline forecast for future promotions, distribution strategy, discontinued SKUs and exception-based inputs
- Generated aggregated views/reporting at a category and sub-category levels for the forecast period







Dynamic adjustment and reporting of forecast based on corporate overays related to marketing, pricing & cannibalization

Objective

- Apply various corporate overlays on the consolidated forecast
- Generate reports/charts to compare forecast and shipments with annual plan and historical values

Approach

- Use consolidated 100% grossed-up sales forecast and trade spend as inputs
- Apply corporate overlays related to marketing, pricing, competitors' activity, cannibalization etc. at a retailer and sub-category level for the forecast period
- Update the retail forecast and trade spend based on the corporate overlays and generate the final consensus forecast in the required reporting format
- Generate reports to compare projected, prior year and actual consumption/shipments for the selected retailer and sub-category



	Week	Week	Week	Week	Week	Week	Week	Week	Week	1	7	1	٦	۲	1 1	Week	ton :		
Cases ('000)	49,	50,	51,	52,	1			4.								13, 2015	Jan-l	Feb	Mar-l
Current Forecast					1,174	1,933	2,173	2,185	1,867	#	#	#	#			2,634	7,465	7,571	12,234
Sales Roll Up	1,057	1,739	1,956	1,966	1,174	1,933	2,173	2,185	1,867							2,634	7,465	7,571	12,23
Base Consumption Fore	695	1,332	1,547	1,739	772	1,480	1,719	1,932	1,495	#	#	#	#	= =	#	2,448	5,904	6,373	10,305
Incremental: Sales Activ	362	407	409	227	402	453	454	252	372				#			185	1,561	1,198	1,929
Building Blocks					0	0	0	0	0	0	0	0	0	0 (0 0	0	0	0	-
Category Dynamics					0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	
Shopper					0	0	0	0	0	0	0	0	0	0 0	0 0	0	0	0	(
Marketing Spend					0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	(
Pricing					0	0	0	0	0	0	0	0	0	0 0	0 (0	0	0	(
Cannibalization					0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	(
Competitive Activity					0	0	0	0	0	0	0	0	0	0 0	0 0	0	0	0	(
Packaging Opportunities					0	0	0	0	0	0	0	0	0	0 0	0	0	0	0	0
Prior month Forecast	0	0	0	0	0	0	0	0	0	0	0	0	0	0 (0	0	0	0	
Index: Current vs. Prior Fore	cost				-	-	-	-	-	-		-	-	- -	-	-	-	-	
Prior year consumption	1,293	1,302	1,125	833	1,269	1,521	1,624	1,633	1,426	ø	ø	ø	8		H	1,636	6,046	6,477	7,917
Index: Current vs. Past Year					93	127	134	134	131	#	z	ø	#	a a	#	161	123	117	155
2015 Actual consumption	0	0	0	0	0	0	0	0	0	0	0	0	0	0 (0	0	0	0	
Index: Current vs. 2015 Actu	als						-										-		
Projected Shipments (26 we	0	90	666	1,489	2,127	2,087	2,050	2,033	1,885	#	#	*				1,806	8,297	8,003	11,665
2015 Sales Plan	0	0	0	0	2,104	1,949	1,938	1,986	1,851	#	#	#	#	= :		2,035	7,978	7,599	11,78
ladov Broi chiamonte ve W	ME color	nine			101	107	106	102	102		44					90	104	100	00

Shipment scheduling tool to generate expected weekly shipments by SKU and warehouse for operations planning

Publix

Safeway

Objective

 Generate wholesale shipment schedule (by SKU, warehouse, customer warehouse) for the Operations planning team based on the retail forecast (after overlays)

Approach

- Use the final consolidated retail forecast (after overlays) as input
- Split the retail forecast by direct and indirect (through distributor) sales
- Estimate the retail-wholesale time lag for each retailer and sub-category combination using optimization techniques (minimize error between retail sales and time-adjusted wholesale shipments)
- Apply the calculated lag to convert retail forecast into wholesale forecast at customer level
- Generate shipment schedule ((by SKU, 'From' warehouse and 'To' customer warehouse) based on the wholesale forecast

				Total	1,275,905	1,766,778	1,723,334	1,731,959	
Wee	kly shipment schedule by SKU and	d primary wa	arehouse fo					.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
SKU	Tributal Control of the Control of t	Planning	Filliary	Customer	100				
ID	SKU Desc.	unit	warehous	account	27-Dec	03-Jan-	10-Jan	17-Jan-	
4	12/5.3oz Chobani 0% Strawberry	CoreSS	New York	Giant Carlisle	225	303	1,329	373	
5	12/5.3oz Chobani 0% Blueberry	CoreSS	New York	Giant Carlisle	279	376	1,647	463	
4	12/5.3oz Chobani 0% Strawberry	CoreSS	Idaho	Kroger - Layton	78	257	127	248	
5	12/5.3oz Chobani 0% Blueberry	CoreSS	Idaho	Kroger - Layton	102	338	167	326	
4	12/5.3oz Chobani 0% Strawberry	CoreSS	New York	Shaws	713	482	487	457	
5	12/5.3oz Chobani 0% Blueberry	CoreSS	New York	Shaws	843	570	576	540	
4	12/5.3oz Chobani 0% Strawberry	CoreSS	Idaho	Target-Phoenix	206	797	404	1,021	
5	12/5.3oz Chobani 0% Blueberry	CoreSS	Idaho	Target-Phoenix	208	806	409	1,034	
4	12/5.3oz Chobani 0% Strawberry	CoreSS	New York	Wakefern	4,177	5,084	5,140	4,818	
5	12/5.3oz Chobani 0% Blueberry	CoreSS	New York	Wakefern	5,144	6,260	6,330	5,932	
4	12/5.3oz Chobani 0% Strawberry	CoreSS	Chicago	Walmart-Olney	63	76	77	72	
5	12/5.3oz Chobani 0% Blueberry	CoreSS	Chicago	Walmart-Olney	62	75	76	71	
4	12/5 3oz Chobani 0% Strawberry	CoreSS	New York	Weis Markets	209	122	149	347	
5	12/5.3oz Chobani 0% Blueberry	CoreSS	New York	Weis Markets	234	137	167	387	
6	12/5.3oz Chobani 0% Peach	CoreSS	New York	Weis Markets	223	130	159	369	
10	12/5.3oz Chobani 2% Pineapple	CoreSS	New York	Weis Markets	209	122	149	347	
12	12/5 3oz Chobani 0% Raspberry	CoreSS	New York	Weis Markets	234	137	167	387	
Prim	nary warehouse		27-Dec	03-Jan-	10-Jan	17-J	an-	24-Jan-:	
Idah	10		534,854	550,210	658,146	6 61	6,848	626,617	
Chic	ago		760,746	779,537	936,110	87	77,370	891,265	
Nev	v York		1,316,681	1,363,898	1,620,195	1,51	8,531	1,542,579	
Arlin	ngton		131,077	134,657	161,29	2 15	1,171	153,565	
Flor	ida		379,335	392,113	466,777	7 43	7,488	444,416	
Haze	elton		54,928	54,809	67,590	0 6	3,348	64,352	
Plan	nning unit		27- Dec	03-Jan-	10-Jan-	17-J	an	24-Jan	
Con			1,587,370	1,777,183	1,953,273	1,83	0,710	1,859,703	
	eMS		250,060	121,723	307,707		8,400	292,960	
Flip			314,160	336,435	386,577		2,323	368,060	
	eMP		0	0		0	0	0	
	tMP		0	0		0	0	0	
Ligh	155		579,500	620,587	713,080	0 66	8,337	678,920	
$\overline{}$	tomer parent		27- Dec-	03-Jan-	10-Jan	17-J		24-Jan-	
	Wholesale		284,949	303,197	350,634		8,632	333,836	
	mart		79,440	81,881	97,75		1,619	93,070	
Kro	•		79,361	81,801	97,655		1,527	92,977	
Aho	old	- 1	37,600	37,573	46,268	8 4	3,364	44,051	

79,441

72,711

81,881

74,693

97,753

89,471

91,619

83,857

93,070

85,185