

LOGICHAIN 2024 YOU&I

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Executive Summary

S

Situation

- Diverse instant coffee product portfolio
- Anticipates revenues of \$388 million in 2025
- Aims to align production with seasonal demand, reduce costs, and maintain quality

C

Complication

- Current production can't meet peak demand efficiently with a one-month lead time
- Risks include high inventory costs, stockouts, and slower response to demand changes

Q

Question

- Enhance production capacity to meet 2025 demand while cutting costs and staying competitive

A

Answers

- Short-term: Use a two-month lead time, add machine capacity, and subcontract labor
- Long-term: Invest in a new production line to reduce bottlenecks and seasonal dependency
- Inventory strategy: Implement FIFO to manage shelf life

LSC: a coffee products manufacturer specializing in instant coffee



LSC has three main product categories:
3In1, Espresso, and Pure Black

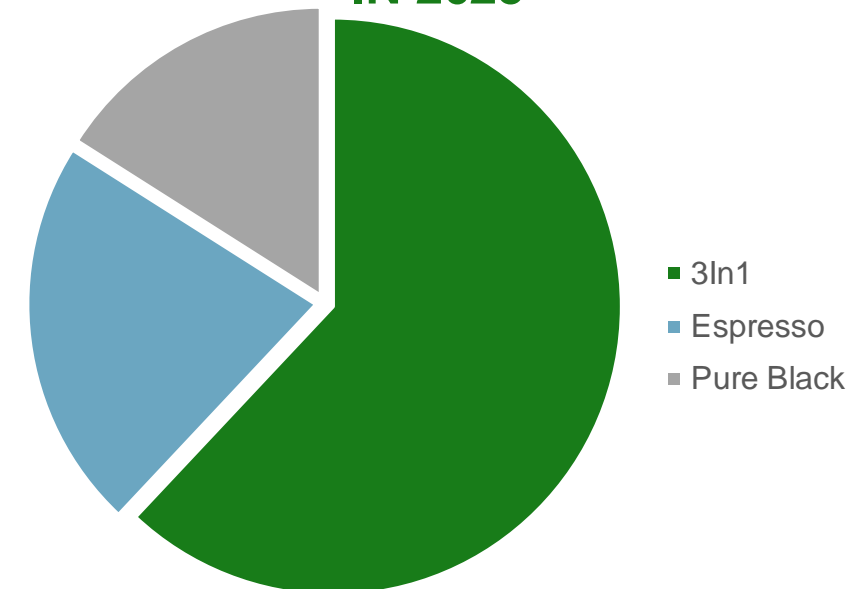
In 2025, LSC is expected to have a total
revenue of **\$388,000,000**

Require a whole-year **capacity plan** for the
instant coffee products in 2025

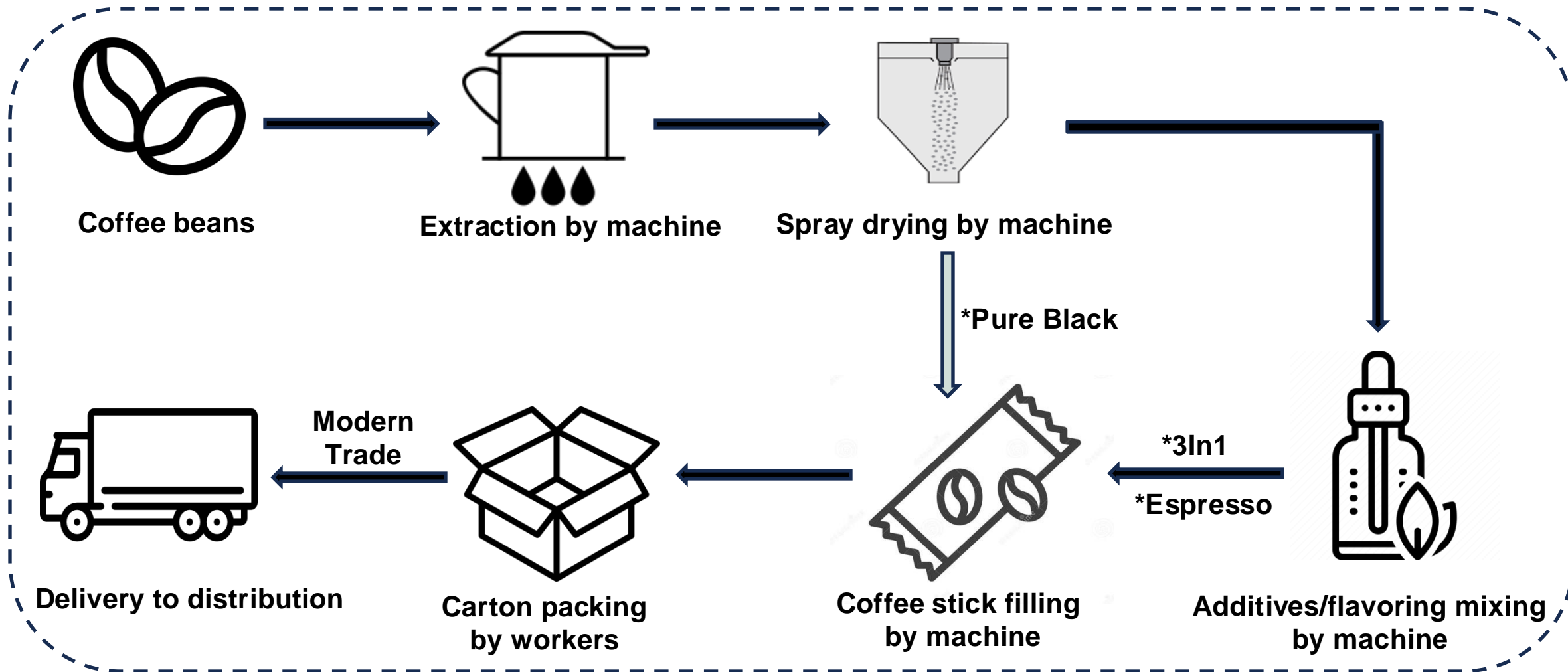
PRODUCT SKUS

Categories	SKU Code	Description
3In1	LSC3IN100050	3In1 Instant Coffee – Bag 50 sticks
	LSC3IN1000100	3In1 Instant Coffee – Bag 100 sticks
	LSC3IN100020	3In1 Instant Coffee – Box 20 sticks
	LSC3IN100024	3In1 Instant Coffee – Box 24 sticks
Espresso	LSCESP000015	Espresso Instant Coffee – Box 15 sticks
	LSCESP000100	Espresso Instant Coffee – Box 50 sticks
	LSCESP000050	Espresso Instant Coffee – Box 100 sticks
Pure Black	LSCPUR000015	Pure Black Instant Coffee – Box 15 sticks
	LSCPUR000020	Pure Black Instant Coffee – Box 20 sticks
	LSCPUR000024	Pure Black Instant Coffee – Bag 24 sticks

LSC PRODUCTS' REVENUE IN 2025



LSC Production Flow



Estimate future capacity requirements:

Month	Seasonal index
January	89,50%
February	102,00%
March	97,70%
April	94,60%
May	67,90%
June	41,50%
July	171,40%
August	61,00%
September	94,70%
October	71,20%
November	189,40%
December	119,10%



Total revenue per month	3In1 (62%)	Espresso (22%)	Pure Black (16%)
\$28,938,333	\$17,941,767	\$6,366,433	\$4,630,133
\$32,980,000	\$20,447,600	\$7,255,600	\$5,276,800
\$31,589,667	\$19,585,593	\$6,949,727	\$5,054,347
\$30,587,333	\$18,964,147	\$6,729,213	\$4,839,973
\$21,954,333	\$13,611,687	\$4,829,953	\$3,512,693
\$13,418,333	\$8,319,367	\$2,952,033	\$2,146,933
\$55,419,333	\$34,359,987	\$12,192,253	\$8,867,093
\$19,723,333	\$12,228,467	\$4,339,133	\$3,155,733
\$30,619,667	\$18,984,193	\$6,736,327	\$4,899,147
\$23,021,333	\$14,273,227	\$5,064,693	\$3,683,413
\$61,239,333	\$37,968,387	\$13,472,653	\$9,798,293
\$38,509,000	\$23,875,580	\$8,471,980	\$6,161,440
Total	\$388,000,000	\$240,560,000	\$85,360,000

Seasonal index for each month of 2025

Estimated revenue of product categories for each month of 2025

Estimate future capacity requirements of each SKUs:

For example: LSC3IN100050 in January

Based on the given revenue ratio per group, the estimated revenue of LSC3IN100050 in 2025 can be calculated:

Revenue of 3in1 Coffee in 2025 x LSC3IN100050(percentage) = $\$240,560,000 \times 36\% = \$86,601,600$

The number of carton :

Revenue of LSC3IN100050 in 2025 / Selling price per carton = $\$86,601,600 / \$20.70 = 4,183,652.174$ cartons

The number of carton in January:

LSC3IN100050's carton number x Jan's index/ total 12 months index = $4,183,652.174 \times 89,50\% / 1200\% = 312,030.72$ cartons

The number of bag/box in January:

LSC3IN100050's carton number in Jan x Bag/box per carton = $312,030.72 \times 10 = 3,120,307.2$ bags

The number of sticks in January:

LSC3IN100050's bag/box in Jan x Sticks per bag = $3,120,307.2 \times 50 = 156,015,362.32$ sticks

LSC3IN100050's kgs in Jan: LSC3IN100050's sticks in Jan x N.W per sticks = $156,015,362.32 \times 0.016 = 2,496,245.80$ kg

Estimate future capacity requirements:

From the formula, the future demand for the number of kg per SKU are calculated as follow:

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
LSC3IN100050	2,496,246	2,844,883	2,724,952	2,638,490	1,893,800	1,157,477	4,780,520	1,701,352	2,641,279	1,985,840	5,282,558	3,321,820
LSC3IN1000100	1,941,525	2,212,687	2,119,407	2,052,159	1,472,955	900,260	3,718,182	1,323,274	2,054,328	1,544,542	4,108,656	2,583,638
LSC3IN100020	835,108	951,743	911,620	882,695	633,562	387,229	1,599,301	569,180	883,628	664,354	1,767,256	1,111,300
LSC3IN100024	1,675,858	1,909,916	1,829,400	1,771,354	1,271,405	777,074	3,209,408	1,142,205	1,773,226	1,333,197	3,546,453	2,230,108
LSCESP000015	193,688	220,739	211,433	204,725	146,943	89,811	370,928	132,011	204,941	154,085	409,882	257,745
LSCESP000100	390,038	444,513	425,774	412,264	295,906	180,856	746,956	265,836	412,700	310,288	825,400	519,034
LSCESP000050	303,363	345,732	331,157	320,650	230,149	140,666	580,966	206,762	320,989	241,335	641,978	403,693
LSCPUR000015	52,194	59,484	56,976	55,168	39,598	24,202	99,956	35,574	55,227	41,522	110,453	69,456
LSCPUR000020	53,694	61,193	58,613	56,754	40,735	24,897	102,828	36,596	56,814	42,715	113,627	71,452
LSCPUR000024	88,712	101,102	96,840	93,767	67,302	41,135	169,891	60,463	93,866	70,573	187,732	118,051
	8,030,426 kg	9,151,995 kg	8,766,177 kg	8,488,029 kg	6,092,361 kg	3,723,611 kg	15,378,945 kg	5,473,259 kg	8,497,006 kg	6,388,460 kg	16,994,006 kg	10,686,310 kg

Existing Capacity Analysis

Assuming the working days for machine consist of 26 days, with maintenance once every 2 months on the weekend, the production capacity for each steps of production flow are:

Extraction		Quantity	Shift per day	Days of working	Capa per machine per shift	Maximum capa per month
		2	3	26	48,000	7,488,000 kg
Spray drying		Quantity	Shift per day	Days of working	Capa per machine per shift	Maximum capa per month
		2	3	26	41,800	6,520,800 kg
Mixing	3In1	Quantity	Shift per day	Days of working	Capa per machine per shift	Maximum capa per month
		2	3	26	37,150	5,795,400 kg
	Esp	Quantity	Shift per day	Days of working	Capa per machine per shift	Maximum capa per month
		2	3	26	2,880	449,280 kg
Stick filling	3In1	Quantity	Shift per day	Days of working	Capa per machine per shift	Maximum capa per month
		2	3	26	37,150	374,400,000 sticks
	Esp	Quantity	Shift per day	Days of working	Capa per machine per shift	Maximum capa per month
		2	3	26	2,880	187,200,000 sticks
	PB	Quantity	Shift per day	Days of working	Capa per machine per shift	Maximum capa per month
		2	3	26	2,880	208,800,000 sticks
Packing		Quantity	Shift per day	Days of working	Capa per worker per shift	Maximum capa per month
		2	3	26	2,880	2,769,000 cartons

Analysis

Compare maximum capacity with future demand

Scenario 1: Production starts in December 2024

Capacity < Demand

Even with **maximum capacity**,
production still **fall well off** the
projected demand
-> Consider adopting a 2-month
production strategy

Extraction (kgs)	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	0	(582.425)	(2.286.419)	(3.604.592)	(4.644.617)	(3.288.974)	435.421	(7.495.516)	(5.520.767)	(6.569.765)	(5.510.215)	(15.056.210)
Production	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000
Demand	8.030.425	9.151.993	8.766.174	8.488.025	6.092.356	3.723.605	15.378.938	5.473.251	8.496.998	6.388.450	16.993.995	10.686.298
Closing inventory	(582.425)	(2.286.419)	(3.604.592)	(4.644.617)	(3.288.974)	435.421	(7.495.516)	(5.520.767)	(6.569.765)	(5.510.215)	(15.056.210)	(18.294.508)

Spray drying (kgs)	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	(1.509.625)	(4.140.819)	(6.386.192)	(8.353.417)	(7.924.974)	(5.127.779)	(13.985.916)	(12.938.367)	(14.914.565)	(14.782.215)	(25.255.410)
Production	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800
Forecast	8.030.425	9.151.993	8.766.174	8.488.025	6.092.356	3.723.605	15.378.938	5.473.251	8.496.998	6.388.450	16.993.995	10.686.298
Closing inventory	(1.509.625)	(4.140.819)	(6.386.192)	(8.353.417)	(7.924.974)	(5.127.779)	(13.985.916)	(12.938.367)	(14.914.565)	(14.782.215)	(25.255.410)	(29.420.908)

Mixing (3in1) (kgs)	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	(1.153.336)	(3.277.166)	(5.067.146)	(6.616.443)	(6.092.766)	(3.519.405)	(11.031.417)	(9.972.027)	(11.529.089)	(11.261.622)	(20.171.144)
Production	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400
Forecast	6.948.736	7.919.230	7.585.380	7.344.697	5.271.723	3.222.040	13.307.412	7.352.010	7.352.461	5.527.933	14.704.923	9.246.865
Closing inventory	(1.153.336)	(3.277.166)	(5.067.146)	(6.616.443)	(6.092.766)	(3.519.405)	(11.031.417)	(9.972.027)	(11.529.089)	(11.261.622)	(20.171.144)	(23.622.610)

Mixing (Espresso) (kgs)	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	(437.809)	(999.514)	(1.518.599)	(2.006.957)	(2.230.676)	(2.192.728)	(3.442.298)	(3.597.627)	(4.086.976)	(4.343.403)	(5.771.383)
Production	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280
Forecast	887.089	1.010.985	968.365	937.639	672.999	411.332	1.698.851	604.608	938.630	705.707	1.877.260	1.180.473
Closing inventory	(437.809)	(999.514)	(1.518.599)	(2.006.957)	(2.230.676)	(2.192.728)	(3.442.298)	(3.597.627)	(4.086.976)	(4.343.403)	(5.771.383)	(6.502.576)

Stick filling (3in1) (kgs)	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	(958.336)	(2.887.166)	(4.482.146)	(5.836.443)	(5.117.766)	(2.349.405)	(9.666.417)	(8.412.027)	(9.774.089)	(9.311.622)	(18.026.144)
Production	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400
Forecast	6.948.736	7.919.230	7.585.380	7.344.697	5.271.723	3.222.040	13.307.412	7.352.010	7.352.461	5.527.933	14.704.923	9.246.865
Closing inventory	(958.336)	(2.887.166)	(4.482.146)	(5.836.443)	(5.117.766)	(2.349.405)	(9.666.417)	(8.412.027)	(9.774.089)	(9.311.622)	(18.026.144)	(21.282.610)

Stick filling (Espresso) (kgs)	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	(419.089)	(962.074)	(1.462.439)	(1.932.077)	(2.137.076)	(2.080.408)	(3.311.258)	(3.447.867)	(3.918.496)	(4.156.203)	(5.565.463)
Production	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000
Forecast	887.089	1.010.985	968.365	937.639	672.999	411.332	1.698.851	604.608	938.630	705.707	1.877.260	1.180.473
Closing inventory	(419.089)	(962.074)	(1.462.439)	(1.932.077)	(2.137.076)	(2.080.408)	(3.311.258)	(3.447.867)	(3.918.496)	(4.156.203)	(5.565.463)	(6.277.936)

Stick filling (Pure Black) (kgs)	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	8.200	(10.779)	(20.408)	(23.297)	31.868	144.434	(25.441)	44.727	41.620	89.610	(119.403)
Production	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800
Forecast	194.600	221.779	212.429	205.689	147.635	90.234	372.675	132.632	205.906	154.810	411.813	258.959
Closing inventory	8.200	(10.779)	(20.408)	(23.297)	31.868	144.434	(25.441)	44.727	41.620	89.610	(119.403)	(175.562)

Packing (cartons)	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	(342.052)	(860.788)	(1.318.745)	(1.732.884)	(1.769.628)	(1.433.217)	(2.932.898)	(2.872.112)	(3.287.665)	(3.371.053)	(5.125.158)
Production	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000
Forecast	1.265.052	1.441.736	1.380.957	1.337.139	959.744	586.589	2.422.681	862.214	1.338.553	1.006.388	2.677.105	1.683.438
Closing inventory	(342.052)	(860.788)	(1.318.745)	(1.732.884)	(1.769.628)	(1.433.217)	(2.932.898)	(2.872.112)	(3.287.665)	(3.371.053)	(5.125.158)	(5.885.596)

Analysis

Compare maximum capacity with future demand

Scenario 2: Production starts in November 2024

Capacity < Demand

Despite **improvement** from scenario 1, there is still a **shortage in certain demand**
-> Consider adopting a 2-month production strategy with **increases in machine and labor capacity**

Extraction (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	7.448.000	6.865.575	5.161.581	3.843.408	2.803.383	4.159.026	7.883.421	(47.516)	1.927.233	878.235	1.937.785	(7.608.210)
Production	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000
Forecast		8.030.425	9.151.993	8.766.174	8.488.025	6.092.356	3.723.605	15.378.938	5.473.251	8.496.998	6.388.450	16.993.995	10.686.298
Closing inventory	7.448.000	6.865.575	5.161.581	3.843.408	2.803.383	4.159.026	7.883.421	(47.516)	1.927.233	878.235	1.937.785	(7.608.210)	(10.846.508)
Spray drying (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	6.520.800	5.011.175	2.379.981	134.608	(1.832.617)	(1.404.174)	1.393.021	(7.465.116)	(6.417.567)	(8.393.765)	(8.261.415)	(18.734.610)
Production	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800
Forecast		8.030.425	9.151.993	8.766.174	8.488.025	6.092.356	3.723.605	15.378.938	5.473.251	8.496.998	6.388.450	16.993.995	10.686.298
Closing inventory	6.520.800	5.011.175	2.379.981	134.608	(1.832.617)	(1.404.174)	1.393.021	(7.465.116)	(6.417.567)	(8.393.765)	(8.261.415)	(18.734.610)	(22.900.108)
Mixing (3In1) (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	5.795.400	4.642.064	2.518.234	728.254	(821.043)	(297.366)	2.275.995	(5.236.017)	(4.176.627)	(5.733.689)	(5.466.222)	(14.375.744)
Production	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400
Forecast		6.948.736	7.919.230	7.585.380	7.344.697	5.271.723	3.222.040	13.307.412	4.736.010	7.352.461	5.527.933	14.704.923	9.246.865
Closing inventory	5.795.400	4.642.064	2.518.234	728.254	(821.043)	(297.366)	2.275.995	(5.236.017)	(4.176.627)	(5.733.689)	(5.466.222)	(14.375.744)	(17.827.210)
Mixing (Espresso) (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	449.280	11.471	(550.234)	(1.069.319)	(1.557.677)	(1.781.396)	(1.743.448)	(2.993.018)	(3.148.347)	(3.637.696)	(3.894.123)	(5.322.103)
Production	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280
Forecast		887.089	1.010.985	968.365	937.639	672.999	411.332	1.698.851	604.608	938.630	705.707	1.877.260	1.180.473
Closing inventory	449.280	11.471	(550.234)	(1.069.319)	(1.557.677)	(1.781.396)	(1.743.448)	(2.993.018)	(3.148.347)	(3.637.696)	(3.894.123)	(5.322.103)	(6.053.296)
Stick filling (3In1) (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	5.990.400	5.032.064	3.103.234	1.508.254	153.957	872.634	3.640.995	(3.676.017)	(2.421.627)	(3.783.689)	(3.321.222)	(12.035.744)
Production	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400
Forecast		6.948.736	7.919.230	7.585.380	7.344.697	5.271.723	3.222.040	13.307.412	4.736.010	7.352.461	5.527.933	14.704.923	9.246.865
Closing inventory	5.990.400	5.032.064	3.103.234	1.508.254	153.957	872.634	3.640.995	(3.676.017)	(2.421.627)	(3.783.689)	(3.321.222)	(12.035.744)	(15.292.210)
Stick filling (Esspreso) (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	468.000	48.911	(494.074)	(994.439)	(1.464.077)	(1.669.076)	(1.612.408)	(2.843.258)	(2.979.867)	(3.450.496)	(3.688.203)	(5.097.463)
Production	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000
Forecast		887.089	1.010.985	968.365	937.639	672.999	411.332	1.698.851	604.608	938.630	705.707	1.877.260	1.180.473
Closing inventory	468.000	48.911	(494.074)	(994.439)	(1.464.077)	(1.669.076)	(1.612.408)	(2.843.258)	(2.979.867)	(3.450.496)	(3.688.203)	(5.097.463)	(5.809.936)
Stick filling (Pure Black) (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	202.800	211.000	192.021	182.392	179.503	234.668	347.234	177.359	247.527	244.420	292.410	83.397
Production	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800
Forecast		194.600	221.779	212.429	205.689	147.635	90.234	372.675	132.632	205.906	154.810	411.813	258.959
Closing inventory	202.800	211.000	192.021	182.392	179.503	234.668	347.234	177.359	247.527	244.420	292.410	83.397	27.238
Packing (cartons)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	923.000	580.948	62.212	(395.745)	(809.884)	(846.628)	(510.217)	(2.009.898)	(1.949.112)	(2.364.665)	(2.448.053)	(4.202.158)
Production	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000
Forecast		1.265.052	1.441.736	1.380.957	1.337.139	959.744	586.589	2.422.681	862.214	1.338.553	1.006.388	2.677.105	1.683.438
Closing inventory	923.000	580.948	62.212	(395.745)	(809.884)	(846.628)	(510.217)	(2.009.898)	(1.949.112)	(2.364.665)	(2.448.053)	(4.202.158)	(4.962.596)

Analysis

Outsourcing manufacturing equipment cost

Minimum order quantity(kgs)	5.000.000	kg
Order quantity each month(kgs)	6.080.000	kg
Ordering cost per ton	\$200,00	
Outsourcing cost per month	\$1.216.000	
Outsourcing cost for the whole plan	\$15.808.000	
Total capacity of machine per month	26.874.680	
Percentage of outsourcing machine	22,62%	

Outsourcing capacity increase

Minimum Monthly Order Quantity: 5,000 tons

Required Capacity Increases:

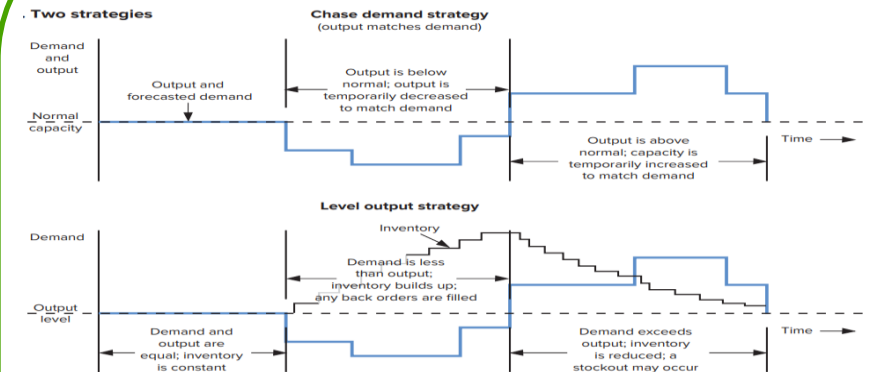
- **Extraction:** 0.840 tons
- **Spray Drying:** 1.770 tons
- **3-in-1 Mixing:** 1.380 tons
- **Espresso Mixing:** 0.460 tons
- **3-in-1 Stick Filling:** 1.177 tons
- **Espresso Stick Filling:** 0.447 tons

Total Cost of Additional Equipment: \$15,808,000

This subcontract is feasible since the total capacity increase does not exceed the maximum capacity allowed (<30%)

Definition

Two strategies



- **Level Output Strategy:** Maintain a strategic inventory level as a buffer to prevent stockouts and ensure product freshness.
- **Chase Demand Strategy:** Temporarily increase capacity through overtime, subcontracting, or other flexible methods to meet peak demand.

Beneficial for **reducing holding costs** by ensuring inventory remains fresh while **minimizing the sales loss** with **balanced operations** (Palanivel et al. 2024)

Hybrid strategy

ANALYSIS

After comparison between the option of overtime labor and outsourced labor, the monthly labor cost from option 1 is completely higher (8.786.960.000 > 7.710.400.000). As a result, LSC should decide to outsource to increase the capacity, fulfilling the shortage.

Outsourced Labor costs of the Packing step

Cost Estimation for option 1 of Packing step (Overtime)	
Basic Salary per month (26 days)	7.072.000 đ
Number of Days per month	26
Basic salary per person per shift	272.000 đ
Basic salary per person per hour	34.000 đ
Overtime Salary per person per hour	51.000 đ
Labor cost per person per day	476.000 đ
Total labor cost per month	8.786.960.000 đ
Total labor cost for the whole year	114.230.480.000 đ
Cost Estimation for option 2 of the Packing step (Outsource)	
Basic Salary per month (26 days)	7.072.000
Number of Days per month	26
Basic salary per person per shift	272.000 đ
Basic salary per person per hour	34.000 đ
Outsourcing Salary per person per shift	352.000 đ
Shift required	7640
Total labor cost per month	7.710.400.000 đ
Total labor cost for the whole plan	100.235.200.000 đ

Production line investment:

High Initial Investment:

Significant upfront costs for machinery, facility upgrades, and training.



Financial Considerations:

Careful planning and resource allocation are crucial.



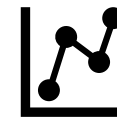
Drawbacks of the
extended
production line

By strategically investing in a new production line, LSC can **position itself** for sustained growth, **optimize operations**, and solidify its **market leadership**.

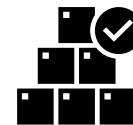
Why another
production line is
enough

Improved Flexibility:

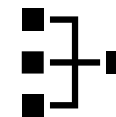
Adapting to demand fluctuations and minimizing disruptions.



Increased Capacity: Addressing peak demand and enabling long-term growth.



Enhanced Operational Efficiency: Streamlining production processes and reducing costs.



Capacity plan

Capacity plan:

Extraction (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	8.288.000	8.545.575	7.681.581	7.203.408	7.003.383	9.199.026	13.763.421	6.672.484	9.487.233	9.278.235	11.177.785	2.471.790
Production	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000	7.448.000
Forecast		8.030.425	9.151.993	8.766.174	8.488.025	6.092.356	3.723.605	15.378.938	5.473.251	8.496.998	6.388.450	16.993.995	10.686.298
Closing inventory	7.448.000	7.705.575	6.841.581	6.363.408	6.163.383	8.359.026	12.923.421	5.832.484	8.647.233	8.438.235	10.337.785	1.631.790	(766.508)
Outsource	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000	840.000
Result after outsource	8.288.000	8.545.575	7.681.581	7.203.408	7.003.383	9.199.026	13.763.421	6.672.484	9.487.233	9.278.235	11.177.785	2.471.790	73.492

Spray drying (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	8.290.800	8.551.175	7.689.981	7.214.608	7.017.383	9.215.826	13.783.021	6.694.884	9.512.433	9.306.235	11.208.585	2.505.390
Production	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800	6.520.800
Forecast		8.030.425	9.151.993	8.766.174	8.488.025	6.092.356	3.723.605	15.378.938	5.473.251	8.496.998	6.388.450	16.993.995	10.686.298
Closing inventory	6.520.800	6.781.175	5.444.608	5.247.383	7.445.826	12.013.021	4.924.884	4.924.884	7.742.433	7.536.235	9.438.585	735.390	(1.660.108)
Outsource	1.770.000	1.770.000	1.770.000	1.770.000	1.770.000	1.770.000	1.770.000	1.770.000	1.770.000	1.770.000	1.770.000	1.770.000	1.770.000
Result after outsource	8.290.800	8.551.175	7.689.981	7.214.608	7.017.383	9.215.826	13.783.021	6.694.884	9.512.433	9.306.235	11.208.585	2.505.390	109.892

Mixing (3In1) (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	7.175.400	7.402.064	6.658.234	6.248.254	6.078.957	7.982.634	11.935.995	5.803.983	8.243.373	8.066.311	9.713.778	2.184.256
Production	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400	5.795.400
Forecast		6.948.736	7.919.230	7.585.380	7.344.697	5.271.723	3.222.040	13.307.412	4.736.010	7.352.461	5.527.933	14.704.923	9.246.865
Closing inventory	5.795.400	6.022.064	5.278.234	4.868.254	4.698.957	6.602.634	10.555.995	4.423.983	6.863.373	6.686.311	8.333.778	804.256	(1.267.210)
Outsource	1.380.000	1.380.000	1.380.000	1.380.000	1.380.000	1.380.000	1.380.000	1.380.000	1.380.000	1.380.000	1.380.000	1.380.000	1.380.000
Result after outsource	7.175.400	7.402.064	6.658.234	6.248.254	6.078.957	7.982.634	11.935.995	5.803.983	8.243.373	8.066.311	9.713.778	2.184.256	112.790

Mixing (Espresso) (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	915.280	943.471	847.766	794.681	772.323	1.014.604	1.518.552	734.982	1.045.653	1.022.304	1.231.877	269.897
Production	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280	449.280
Forecast		887.089	1.010.985	968.365	937.639	672.999	411.332	1.698.851	604.608	938.630	705.707	1.877.260	1.180.473
Closing inventory	449.280	477.471	381.766	328.681	306.323	548.604	1.052.552	268.982	579.653	556.304	765.877	(196.103)	(461.296)
Outsource	466.000	466.000	466.000	466.000	466.000	466.000	466.000	466.000	466.000	466.000	466.000	466.000	466.000
Result after outsource	915.280	943.471	847.766	794.681	772.323	1.014.604	1.518.552	734.982	1.045.653	1.022.304	1.231.877	269.897	4.704

Stick filling (3In1) (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	7.167.400	7.386.064	6.634.234	6.216.254	6.038.957	7.934.634	11.879.995	5.739.983	8.171.373	7.986.311	9.625.778	2.088.256
Production	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400	5.990.400
Forecast		6.948.736	7.919.230	7.585.380	7.344.697	5.271.723	3.222.040	13.307.412	4.736.010	7.352.461	5.527.933	14.704.923	9.246.865
Closing inventory	5.990.400	6.209.064	5.457.234	5.039.254	4.861.957	6.757.634	10.702.995	4.562.983	6.994.373	6.809.311	8.448.778	911.256	(1.168.210)
Outsource	1.177.000	1.177.000	1.177.000	1.177.000	1.177.000	1.177.000	1.177.000	1.177.000	1.177.000	1.177.000	1.177.000	1.177.000	1.177.000
Result after outsource	7.167.400	7.386.064	6.634.234	6.216.254	6.038.957	7.934.634	11.879.995	5.739.983	8.171.373	7.986.311	9.625.778	2.088.256	8.790

Significant production backlog at the end of November -> Offloading unfinished work to external suppliers

Capacity plan:

Stick filling (Esspreso) (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	915.000	942.911	846.926	793.561	770.923	1.012.924	1.516.592	732.742	1.043.133	1.019.504	1.228.797	266.537
Production	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000	468.000
Forecast		887.089	1.010.985	968.365	937.639	672.999	411.332	1.698.851	604.608	938.630	705.707	1.877.260	1.180.473
Closing inventory	468.000	495.911	399.926	346.561	323.923	565.924	1.069.592	285.742	596.133	572.504	781.797	(180.463)	(445.936)
Outsource	447.000	447.000	447.000	447.000	447.000	447.000	447.000	447.000	447.000	447.000	447.000	447.000	447.000
Result after outsource	915.000	942.911	846.926	793.561	770.923	1.012.924	1.516.592	732.742	1.043.133	1.019.504	1.228.797	266.537	1.064
Stick filling (Pure Black) (kgs)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	202.800	211.000	192.021	182.392	179.503	234.668	347.234	177.359	247.527	244.420	292.410	83.397
Production	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800	202.800
Forecast		194.600	221.779	212.429	205.689	147.635	90.234	372.675	132.632	205.906	154.810	411.813	258.959
Closing inventory	202.800	211.000	192.021	182.392	179.503	234.668	347.234	177.359	247.527	244.420	292.410	83.397	27.238
Outsource Option													
Packing (cartons)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	1.305.000	1.344.948	1.208.212	1.132.255	1.100.116	1.445.372	2.163.783	1.046.102	1.488.888	1.455.335	1.753.947	381.842
Production	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000
Forecast		1.265.052	1.441.736	1.380.957	1.337.139	959.744	586.589	2.422.681	862.214	1.338.553	1.006.388	2.677.105	1.683.438
Closing inventory	923.000	962.948	826.212	750.255	718.116	1.063.372	1.781.783	664.102	1.106.888	1.073.335	1.371.947	(158)	(378.596)
Outsource	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000
Closing Inventory after outsource	1.305.000	1.344.948	1.208.212	1.132.255	1.100.116	1.445.372	2.163.783	1.046.102	1.488.888	1.455.335	1.753.947	381.842	3.404
Option 2: Outsource													
Packing (cartons)	Sum of Nov-24	Sum of Dec-24	Sum of Jan-25	Sum of Feb-25	Sum of Mar-25	Sum of Apr-25	Sum of May-25	Sum of Jun-25	Sum of Jul-25	Sum of Aug-25	Sum of Sep-25	Sum of Oct-25	Sum of Nov-25
Opening inventory	-	1.305.000	1.344.948	1.208.212	1.132.255	1.100.116	1.445.372	2.163.783	1.046.102	1.488.888	1.455.335	1.753.947	381.842
Production	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000	923.000
Forecast		1.265.052	1.441.736	1.380.957	1.337.139	959.744	586.589	2.422.681	862.214	1.338.553	1.006.388	2.677.105	1.683.438
Closing inventory	923.000	962.948	826.212	750.255	718.116	1.063.372	1.781.783	664.102	1.106.888	1.073.335	1.371.947	(158)	(378.596)
Outsource	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000	382.000
Closing Inventory after outsource	1.305.000	1.344.948	1.208.212	1.132.255	1.100.116	1.445.372	2.163.783	1.046.102	1.488.888	1.455.335	1.753.947	381.842	3.404

Significant production backlog at the end of November -> Offloading unfinished work to external suppliers
Except for the stick filling process for the pure black category, there is no need to increase the capacity level.

THANK YOU FOR WATCHING