
ISLI_MSC_2025_U2_ZIBAL

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I-LOG FINAL REPORT

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1. Company Situation After 12 Periods

1.1 Overview of the Business at the Time of Sale

After 12 periods of activity, the company is being sold in a situation where its operational capability remains strong, but its financial performance has declined significantly. Throughout the game, the business maintained regular production and stable market demand, with sales ranging between approximately 1,500 and 2,200 units per period. This indicates that the company is operating in a healthy market environment and has successfully built a consistent market presence.

However, the firm was unable to shift this demand into profitability. The cumulative profit after 12 periods stands at -€188,824, and the average profit margin is -10.51%, showing recurrent losses across most periods. These issues arose primarily from internal inefficiencies rather than market conditions.

Operationally, the company possesses a maximum production capacity of 3,370 units, but used only 47.48% of that capacity on average. Production fluctuated heavily across periods, and this inconsistent planning contributed to significant inventory imbalances. At the time of sale, the company holds 48,640 units of raw materials and 4,254 units of finished products, providing substantial capital for continuous business flow.

Overall, the company presents a mixed profile: stable demand and strong production potential on one side, but poor alignment between purchasing, production, and distribution on the other. The new management inherits a business with operational strengths but urgent financial and planning challenges that must be corrected to regain profitability.

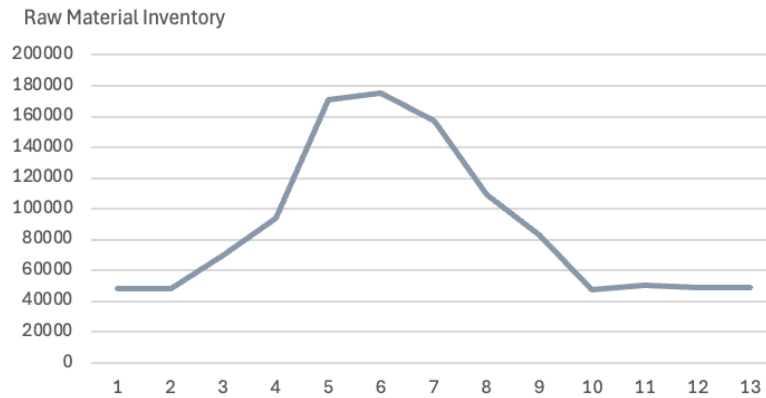
1.2 Operational Performance

Upstream

The raw materials chart on Picture 1 shows that RM inventory increased steadily over time, especially between Periods 1 and 6, reaching a peak of over 135,000 units before gradually decreasing. This pattern indicates a strategy of early stock-building, which was intended to secure sufficient supply for future production.

By Period 12, RM inventory stabilised around 45,000 - 50,000 units, which is appropriate given that the company plans to produce roughly 2,000 finished products per period. This stock level provides a strategic buffer that protects future production from supply disruptions or cost increases.

However, the steep early build-up created short-term liquidity pressure, as shown in the negative cash trend. The large RM purchases during periods of low production and declining profit amplified financial stress. Overall, upstream performance achieved long-term supply security but lacked timing optimisation, contributing to cash depletion.



Picture 1. Raw material chart

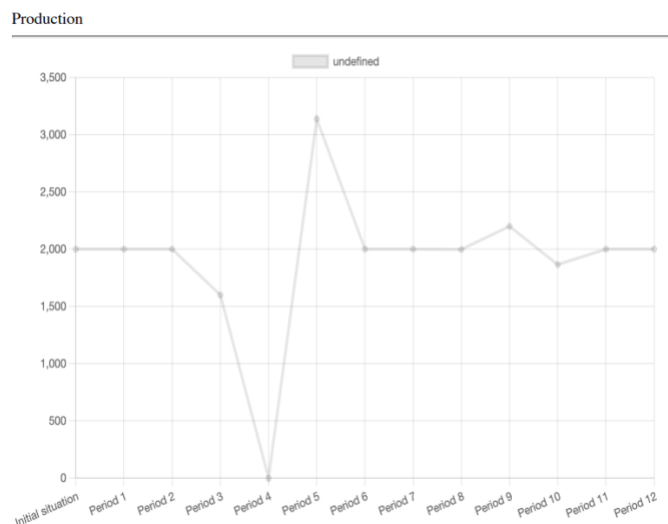
Production

The production chart on Picture 2 below shows major volatility. Output remained stable at 2,000 units in the initial periods but dropped sharply in Periods 3-4, even reaching 0 units in Period 4. Such disruptions indicate planning inconsistencies or mismatches between RM availability, workforce utilisation, or demand forecasts.

After the sharp decline, production recovered rapidly in Period 5 and then peaked at 3,200 units, demonstrating that the company has a strong production capability when operations are aligned. However, following this peak, production again declined gradually toward Period 12.

This inconsistent pattern damages efficiency. The capacity utilisation shows a drop from nearly 100% at the start to around 60% - 75% in later periods. These inconsistencies increased unit costs and contributed to the buildup of finished goods inventory.

Despite the fluctuations, the company consistently maintained 2,000 units or more from Period 5 onward, showing that production stabilised later in the scenario and is now capable of meeting downstream needs reliably.



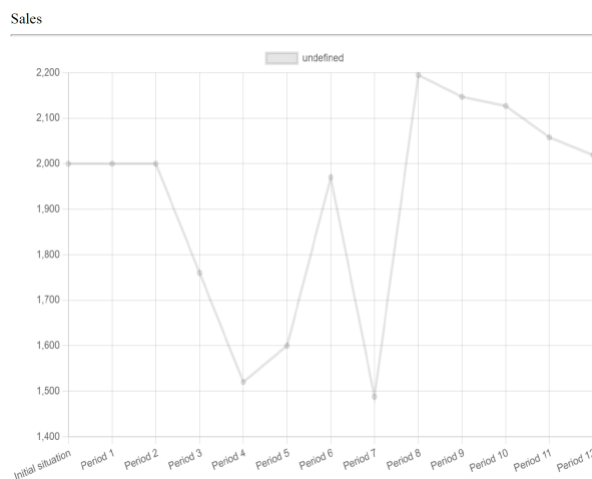
Picture 2. Production Chart

Downstream Performance (Shipping and Distribution)

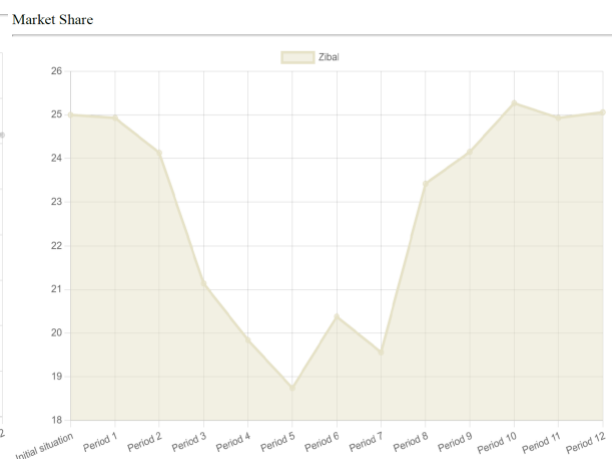
The downstream chart (sales performance) on Picture 3 below shows a similar pattern of variability. After a stable start, sales declined in Periods 3–7 before recovering sharply in Period 8 and stabilising in the following periods. This lag between production changes and sales performance reflects issues in coordinating production output and store shipments.

The market share trend (Picture 4 below) mirrors this pattern: a sharp decline from Period 1 to Period 5, followed by a strong recovery and stabilisation in later periods. The lowest point during Period 5 corresponds directly to the production collapse, indicating unmet demand and lost sales opportunities.

When the company shipped consistently - Periods 8 to 12 - market share and sales recovered to earlier levels. This suggests that downstream issues were not structural but rather planning-related and responsive to improved operations.



Picture 3. Sales



Picture 4. Market share

1.3 Financial Situation

Over the full 12 periods, the company ends with a cumulative loss of -188,774 €, but this global figure hides a turnaround. We can distinguish three phases.

In Periods 1–3, the company is still “learning”. We started very strong in Period 1 with 2,000 units produced and sold, a profit margin of about 43%. However, the following two periods show that our cost structure was not yet under control: From Periods 2–3 losses appeared as costs increased faster than revenues and inventories of both RM and FP started to grow (RM from 48,000 to 94,100 units). Profit margin faced negative figures in Periods 2–3, signalling that the system is fragile.

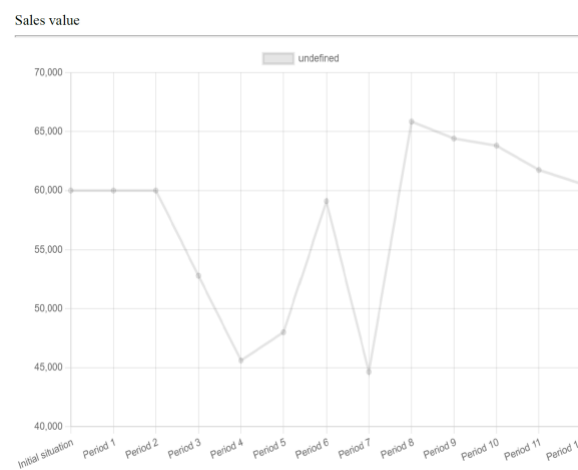
The real break comes in Period 4, when we face a raw-material shortage. Production drops to 0 units, while demand is still 2,272 units. We managed to sell from stock, generating revenue, but fixed production, warehousing and transport costs were still much higher than the revenue. The result is a record loss of -89,063.60 €, with a margin of about -195%. This single period is the worst of the game and drives cumulative profit deeply negative. Both revenue and net profit saw a sharp drop, caused mainly by inventory shortages and production inefficiencies that limited our ability to meet market demand. Our cash balance was reduced temporarily,

putting pressure on operations.

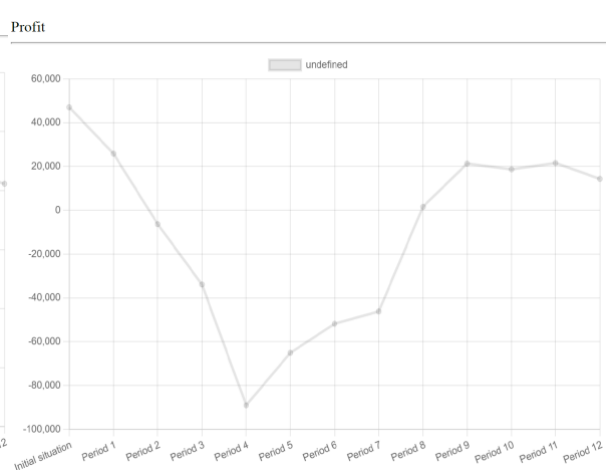
From Period 8 onward, the picture changed completely. Procurement and production are finally aligned: production is close to demand, and we no longer miss sales because of material shortages. Periods 8 - 12 together generate a positive profit of 77,603.46 €, with an average margin of roughly 24.7% and almost full utilisation of demand.

Periods 9 - 12 all show solid positive margins between 24 - 35%. Capacity utilisation over the whole horizon averages about 56%, but in the recovery phase it is much healthier (around 60 - 65%) without overloading. The profit margin improved consistently throughout the later periods, showing that we were not only selling more but doing so more efficiently. By the final periods, the company reached its strongest financial position, with high profitability, stronger cash flow, and efficient cost structure.

So financially, the company's history is dominated by the mid-game crisis, but the current configuration is clearly profitable: in the last five periods we operate with a positive margin around 25%, which we can take as the "ideal" sustainable margin going forward (compared with a maximum observed margin of 43% in Period 1 and a minimum of -195% in Period 4).



Picture 5. Sales value



Picture 6. Profit



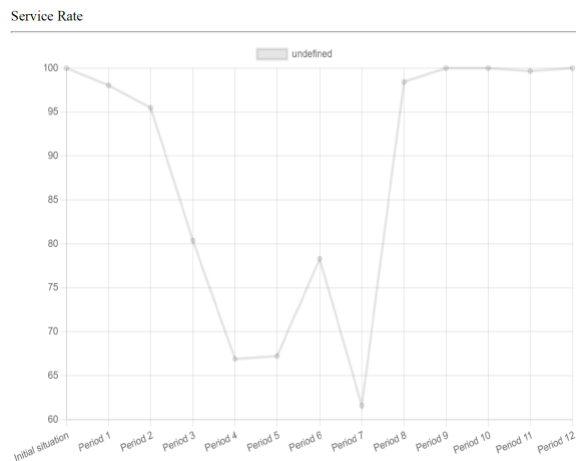
Picture 7. Logistics & production

1.4 Market and Competitive Position

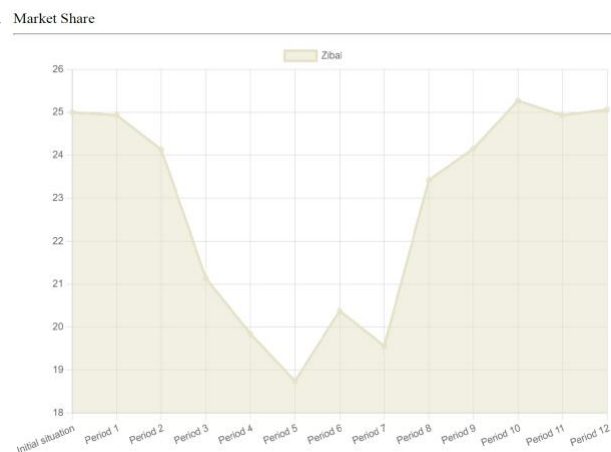
On the market side, we hold an average market share of about 22.6% across the 12 periods, again with a clear disruption around Period 4. At the beginning, in Periods 1 - 2, market share was stable around 24 - 25% and service level was high: 98% in Period 1 and 95% in Period 2.

In Period 4, because we cannot produce, we rely only on existing FP inventory so service level falls to about 67%. Market share drops to 19.84%, and this loss of reliability continues into Periods 5 - 7, where service level fluctuates between 62% and 78%. Market share reaches its minimum of 18.74% in Period 5. These figures show that the competitiveness is availability which means customers turn to competitors when we cannot deliver.

Once we fix the upstream and production issues, the market position recovers quickly. From Period 8 onward, service level is almost perfect: between 98% and 100%, and we fully meet demand in Periods 9, 10 and 12. Market share climbs back above 23% in Period 8 and stabilises around 24.5 - 25% in the last four periods (peak 25.26% in Period 10). This pattern confirms that, with a reliable supply of materials and a balanced production plan, the company can sustain a quarter of the market, competing effectively on both cost and service.



Picture 8. Service rate



Picture 9. Market share

1.5 Summary Before Transfer to New Management

Looking at the whole 12-period history, the company shows two very different stories at the same time. On one hand, the accumulated loss of -188,823.49 € and the strongly negative average margin (driven by the crisis in Periods 4 - 7) tell us that early decisions about material planning and production were not sustainable. On the other hand, the last five periods demonstrate that once the raw-material constraint is solved and production is synchronised with demand, the business model is solid.

After losing over 252,000 € in the four crisis periods, the firm generated 77,603.46 € of profit in Periods 8 - 12, with margins around 25%, service levels close to 100%, and market share back to about 25%. At the same time, it holds inventory assets valued at roughly 117,000 € in FP and RM. This means the new management is inheriting not a failing business, and the current process - from RM purchasing to downstream distribution - has proven it can deliver profitable, competitive performance as long as material availability is kept under control.

2. Analysis of Decisions Over the 12 Periods

Period 1:

- Overall strategy:

Before making any decisions, we looked at the 12-period demand forecast using the DRP, production plan, and MRP. We tried to include all the upcoming events on the downstream, upstream, and production sides so that our initial plan would be as accurate as possible.

(Pictures of our MRP, Production, DRP are below)

| | | <div><div>B</div><div>L</div><div>S</div></div> | <div><div>12</div><div>4</div><div>8</div></div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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--|--|
| | | <table><tr><th>Period</th><th>Period 1</th><th>Period 2</th><th>Period 3</th><th>Period 4</th><th>Period 5</th><th>Period 6</th><th>Period 7</th><th>Period 8</th><th>Period 9</th><th>Period 10</th><th>Period 11</th><th>Period 12</th></tr><tr><td>Gross requirement</td><td>2000</td><td>3167</td><td>0</td><td>3220</td><td>2777</td><td>2498</td><td>2250</td><td>2025</td><td>465</td><td>419</td><td>377</td><td></td></tr><tr><td>B</td><td>24000</td><td>38004</td><td>0</td><td>38640</td><td>33324</td><td>29976</td><td>27000</td><td>24300</td><td>5580</td><td>5028</td><td>4524</td><td></td></tr><tr><td>L</td><td>8000</td><td>12668</td><td>0</td><td>12880</td><td>11108</td><td>9992</td><td>9000</td><td>8100</td><td>1860</td><td>1676</td><td>1508</td><td></td></tr><tr><td>S</td><td>16000</td><td>25336</td><td>0</td><td>25760</td><td>22216</td><td>19984</td><td>18000</td><td>16200</td><td>3720</td><td>3352</td><td>3016</td><td></td></tr><tr><td>Total qty of RM</td><td>48000</td><td>76008</td><td>0</td><td>77280</td><td>66648</td><td>59952</td><td>54000</td><td>48600</td><td>11160</td><td>10056</td><td>9048</td><td></td></tr><tr><td></td><td></td><td>RW max capacity</td><td>50000</td><td>50000</td><td>50000</td><td>50000</td><td>50000</td><td>50000</td><td>50000</td><td>50000</td><td>50000</td><td></td></tr><tr><td></td><td></td><td>Spot storage</td><td>-50000</td><td>27280</td><td>16648</td><td>9952</td><td>4000</td><td>-1400</td><td>-38840</td><td>-39944</td><td>-40952</td><td></td></tr><tr><td></td><td></td><td>Rent 4000Units</td><td>-12,5</td><td>6,82</td><td>4,162</td><td>2,488</td><td>1</td><td>-0,35</td><td>-9,71</td><td>-9,986</td><td>-10,238</td><td></td></tr><tr><td></td><td></td><td>Rent price</td><td>6990</td><td>10081,2</td><td>6675,92</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td>Build 4000Units</td><td>-12,5</td><td>6,82</td><td>4,162</td><td>2,488</td><td>1</td><td>-0,35</td><td>-9,71</td><td>-9,986</td><td>-10,238</td><td></td></tr><tr><td></td><td></td><td>Build price</td><td>1460</td><td>7642,4</td><td>5231,84</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table> | | | | | | | | | | | | Period | Period 1 | Period 2 | Period 3 | Period 4 | Period 5 | Period 6 | Period 7 | Period 8 | Period 9 | Period 10 | Period 11 | Period 12 | Gross requirement | 2000 | 3167 | 0 | 3220 | 2777 | 2498 | 2250 | 2025 | 465 | 419 | 377 | | B | 24000 | 38004 | 0 | 38640 | 33324 | 29976 | 27000 | 24300 | 5580 | 5028 | 4524 | | L | 8000 | 12668 | 0 | 12880 | 11108 | 9992 | 9000 | 8100 | 1860 | 1676 | 1508 | | S | 16000 | 25336 | 0 | 25760 | 22216 | 19984 | 18000 | 16200 | 3720 | 3352 | 3016 | | Total qty of RM | 48000 | 76008 | 0 | 77280 | 66648 | 59952 | 54000 | 48600 | 11160 | 10056 | 9048 | | | | RW max capacity | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 | | | | Spot storage | -50000 | 27280 | 16648 | 9952 | 4000 | -1400 | -38840 | -39944 | -40952 | | | | Rent 4000Units | -12,5 | 6,82 | 4,162 | 2,488 | 1 | -0,35 | -9,71 | -9,986 | -10,238 | | | | Rent price | 6990 | 10081,2 | 6675,92 | | | | | | | | | | Build 4000Units | -12,5 | 6,82 | 4,162 | 2,488 | 1 | -0,35 | -9,71 | -9,986 | -10,238 | | | | Build price | 1460 | 7642,4 | 5231,84 | | | | | | | |
| Period | Period 1 | Period 2 | Period 3 | Period 4 | Period 5 | Period 6 | Period 7 | Period 8 | Period 9 | Period 10 | Period 11 | Period 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gross requirement | 2000 | 3167 | 0 | 3220 | 2777 | 2498 | 2250 | 2025 | 465 | 419 | 377 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 24000 | 38004 | 0 | 38640 | 33324 | 29976 | 27000 | 24300 | 5580 | 5028 | 4524 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| L | 8000 | 12668 | 0 | 12880 | 11108 | 9992 | 9000 | 8100 | 1860 | 1676 | 1508 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| S | 16000 | 25336 | 0 | 25760 | 22216 | 19984 | 18000 | 16200 | 3720 | 3352 | 3016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | RW max capacity | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 | 50000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Spot storage | -50000 | 27280 | 16648 | 9952 | 4000 | -1400 | -38840 | -39944 | -40952 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Rent 4000Units | -12,5 | 6,82 | 4,162 | 2,488 | 1 | -0,35 | -9,71 | -9,986 | -10,238 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | Build price | 1460 | 7642,4 | 5231,84 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <div>Malfunction: in 9 or 10 (occur once) -> reduce by 6000 units</div> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| lead time: | truck | 2 weeks | 0,2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Product B | Period 1 | Period 2 | Period 3 | Period 4 | Period 5 | Period 6 | Period 7 | Period 8 | Period 9 | Period 10 | Period 11 | Period 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | <table><tr><th>Product L</th><th>Period 1</th><th>Period 2</th><th>Period 3</th><th>Period 4</th><th>Period 5</th><th>Period 6</th><th>Period 7</th><th>Period 8</th><th>Period 9</th><th>Period 10</th><th>Period 11</th><th>Period 12</th></tr><tr><td>Gross requirement</td><td>8000</td><td>12668</td><td>0</td><td>12880</td><td>11108</td><td>9992</td><td>9000</td><td>8100</td><td>1860</td><td>1676</td><td>1508</td><td></td></tr><tr><td>Schedule receipts</td><td>8000</td><td>6400</td><td>12880</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Projected available 8000</td><td></td><td></td><td>328</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Net requirement</td><td>0</td><td>-6268</td><td>328</td><td>-12552</td><td>-11108</td><td>-9992</td><td>-9000</td><td>-8100</td><td>-1860</td><td>-1676</td><td>-1508</td><td></td></tr><tr><td>Planned order receipt</td><td></td><td>6268</td><td></td><td>12552</td><td>11108</td><td>9992</td><td>9000</td><td>8100</td><td>1860</td><td>1676</td><td>1508</td><td></td></tr><tr><td>Planned order release</td><td></td><td>6268</td><td>12552</td><td>11108+8100</td><td>9992+1860</td><td>9000+1676</td><td>1508</td><td></td><td></td><td></td><td></td><td></td></tr></table> | | | | | | | | | Product L | Period 1 | Period 2 | Period 3 | Period 4 | Period 5 | Period 6 | Period 7 | Period 8 | Period 9 | Period 10 | Period 11 | Period 12 | Gross requirement | 8000 | 12668 | 0 | 12880 | 11108 | 9992 | 9000 | 8100 | 1860 | 1676 | 1508 | | Schedule receipts | 8000 | 6400 | 12880 | | | | | | | | | | Projected available 8000 | | | 328 | | | | | | | | | | Net requirement | 0 | -6268 | 328 | -12552 | -11108 | -9992 | -9000 | -8100 | -1860 | -1676 | -1508 | | Planned order receipt | | 6268 | | 12552 | 11108 | 9992 | 9000 | 8100 | 1860 | 1676 | 1508 | | Planned order release | | 6268 | 12552 | 11108+8100 | 9992+1860 | 9000+1676 | 1508 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Net requirement | 0 | -6268 | 328 | -12552 | -11108 | -9992 | -9000 | -8100 | -1860 | -1676 | -1508 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Planned order receipt | | 6268 | | 12552 | 11108 | 9992 | 9000 | 8100 | 1860 | 1676 | 1508 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Planned order release | | 6268 | 12552 | 11108+8100 | 9992+1860 | 9000+1676 | 1508 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| lead time: | truck | 1 weeks | 0,3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | <table><tr><th>Product S</th><th>Period 1</th><th>Period 2</th><th>Period 3</th><th>Period 4</th><th>Period 5</th><th>Period 6</th><th>Period 7</th><th>Period 8</th><th>Period 9</th><th>Period 10</th><th>Period 11</th><th>Period 12</th></tr><tr><td>Gross requirement</td><td>16000</td><td>25336</td><td>0</td><td>25760</td><td>22216</td><td>19984</td><td>18000</td><td>16200</td><td>3720</td><td>3352</td><td>3016</td><td></td></tr><tr><td>Schedule receipts</td><td>16000</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Projected available 16000</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Net requirement</td><td>0</td><td>-25336</td><td>-25104</td><td>-25760</td><td>-22216</td><td>-19984</td><td>-18000</td><td>-16200</td><td>-3720</td><td>-3352</td><td>-3016</td><td></td></tr><tr><td>Planned order receipt</td><td></td><td>25336</td><td>25104</td><td>25760</td><td>22216</td><td>19984</td><td>18000</td><td>16200</td><td>3720</td><td>3352</td><td>3016</td><td></td></tr><tr><td>Planned order release</td><td></td><td>25336+25104</td><td>25760</td><td>22216</td><td>19984</td><td>18000</td><td>16200</td><td>3720</td><td>3352</td><td>3016</td><td></td><td></td></tr></table> | | | | | | | | | Product S | Period 1 | Period 2 | Period 3 | Period 4 | Period 5 | Period 6 | Period 7 | Period 8 | Period 9 | Period 10 | Period 11 | Period 12 | Gross requirement | 16000 | 25336 | 0 | 25760 | 22216 | 19984 | 18000 | 16200 | 3720 | 3352 | 3016 | | Schedule receipts | 16000 | | | | | | | | | | | | Projected available 16000 | | | | | | | | | | | | | Net requirement | 0 | -25336 | -25104 | -25760 | -22216 | -19984 | -18000 | -16200 | -3720 | -3352 | -3016 | | Planned order receipt | | 25336 | 25104 | 25760 | 22216 | 19984 | 18000 | 16200 | 3720 | 3352 | 3016 | | Planned order release | | 25336+25104 | 25760 | 22216 | 19984 | 18000 | 16200 | 3720 | 3352 | 3016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Product S | Period 1 | Period 2 | Period 3 | Period 4 | Period 5 | Period 6 | Period 7 | Period 8 | Period 9 | Period 10 | Period 11 | Period 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gross requirement | 16000 | 25336 | 0 | 25760 | 22216 | 19984 | 18000 | 16200 | 3720 | 3352 | 3016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Schedule receipts | 16000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Projected available 16000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Net requirement | 0 | -25336 | -25104 | -25760 | -22216 | -19984 | -18000 | -16200 | -3720 | -3352 | -3016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Planned order receipt | | 25336 | 25104 | 25760 | 22216 | 19984 | 18000 | 16200 | 3720 | 3352 | 3016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Planned order release | | 25336+25104 | 25760 | 22216 | 19984 | 18000 | 16200 | 3720 | 3352 | 3016 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Malfunction:
in 9 or 10 (occur once) ->
reduce by 6000 units

Picture 10. MRP

| Max capacity: 3370 | | | | | | | | | | | | |
|-----------------------------------------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|-----------|-----------|-----------|
| Combination strategy | | | | | | | | | | | | |
| max production: 2000 units for 2 periods(7,8) | | | | | | | | | | | | |
| Period | Period 1 | Period 2 | Period 3 | Period 4 | Period 5 | Period 6 | Period 7 | Period 8 | Period 9 | Period 10 | Period 11 | Period 12 |
| Forecast | 2000 | 1987 | 3167 | 3138 | 3220 | 2777 | 2498 | 2250 | 2025 | 465 | 419 | 377 |
| Planned | 2000 | 2000 | 3167 | 0 | 3220 | 2777 | 2498 | 2250 | 2025 | 465 | 419 | 377 |
| Change in production | | 0 | 1167 | -3167 | 3220 | -443 | -279 | -248 | -225 | -1560 | -46 | -42 |
| Ending inventory | 0 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Picture 11. MPS

| Strike for airplanes: 4 or 5 or 6 or 1 week delay | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------------------|------|-------------------------------|-----------------------------|-----------------------|--------------------------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-------|------|------|------|------|--|--|
| | | Distribution center | | | | | | | | | | | | | | | | | | |
| | | Period 1 | Period 2 | Period 3 | Period 4 | Period 5 | Period 6 | Period 7 | Period 8 | Period 9 | Period 10 | Period 11 | Period 12 | | | | | | | |
| air truck | cost | 12 7 2 | 0 | Capacity: 500 | Gross requirement | 2000 | 1903 | 3130 | 3138 | 0 | 2495 | 2777 | 2498 | 2250 | 2025 | 465 | 419 | 377 | | |
| | | | | | Schedule receipts | | | | | | | | | | | | | | | |
| | | | | | Projected available 2000 | | 1316 | 1316 | | | | | | | | | | | | |
| | | | | | Net requirement | -1987 | -1987 | -1167 | -1138 | -3220 | -2777 | -2498 | -2250 | -2025 | -465 | -419 | -377 | | | |
| | | | | | Planned order receipt | 1987 | 1167 | 1138 | 3220 | 2777 | 2498 | 2250 | 2025 | 465 | 419 | 377 | | | | |
| | | | | | Planned order release | 1987 | 1167 | 1138 | 3220 | 2777 | 2498 | 2250 | 2025 | 465 | 419 | 377 | | | | |
| | | | | | Actual | | | | | | | | | | | | | | | |
| air truck | cost | 12 7 2 | 0 | Capacity: 500 | Gross requirement | 400 | 484 | 532 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | |
| | | | | | Schedule receipts | | 400-84 | 320-212 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | |
| | | | | | Projected available 400 | | -84 | -212 | -586 | -644 | -709 | -638 | -574 | -517 | -465 | -419 | -377 | | | |
| | | | | | Net requirement | -40 | -84 | -212 | -586 | -644 | -709 | -638 | -574 | -517 | -465 | -419 | -377 | | | |
| | | | | | Planned order receipt | 84 | 212 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | | |
| | | | | | Planned order release | 84-586 | 212-644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | | | | |
| | | | | | Bar | | | | | | | | | | | | | | | |
| air truck | cost | 12 7 2 | 0 | Capacity: 500 | Gross requirement | 400 | 484 | 532 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | |
| | | | | | Schedule receipts | | 400-84 | 320-212 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | |
| | | | | | Projected available 400 | | -84 | -212 | -586 | -644 | -709 | -638 | -574 | -517 | -465 | -419 | -377 | | | |
| | | | | | Net requirement | -40 | -84 | -212 | -586 | -644 | -709 | -638 | -574 | -517 | -465 | -419 | -377 | | | |
| | | | | | Planned order receipt | 84 | 212 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | | |
| | | | | | Planned order release | 84-586 | 212-644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | | | | |
| | | | | | Pils | | | | | | | | | | | | | | | |
| air truck | cost | 8 5 1 | 0 | Capacity: 500 | Gross requirement | 400 | 484 | 532 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | |
| | | | | | Schedule receipts | | 400-84 | 532 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | |
| | | | | | Projected available 400 | | -84 | -532 | -586 | -644 | -709 | -638 | -574 | -517 | -465 | -419 | -377 | | | |
| | | | | | Net requirement | -40 | -532 | -586 | -644 | -709 | -638 | -574 | -517 | -465 | -419 | -377 | | | | |
| | | | | | Planned order receipt | 84 | 532 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | | |
| | | | | | Planned order release | 84-532 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | | | |
| | | | | | Saffer | | | | | | | | | | | | | | | |
| air truck | cost | 15 9 3 | 0 | Capacity: 500 | Gross requirement | 400 | 484 | 532 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | |
| | | | | | Schedule receipts | | 400-84 | 320-212 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | |
| | | | | | Projected available 400 | | -84 | -212 | -586 | -644 | -709 | -638 | -574 | -517 | -465 | -419 | -377 | | | |
| | | | | | Net requirement | -40 | -84 | -212 | -586 | -644 | -709 | -638 | -574 | -517 | -465 | -419 | -377 | | | |
| | | | | | Planned order receipt | 84 | 212 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | | |
| | | | | | Planned order release | 84-644 | 212-709 | 586 | 638 | 574 | 517 | 465 | 419 | 377 | | | | | | |
| | | | | | Total local stores | | | | | | | | | | | | | | | |
| | | Period 1 | Period 2 | Period 3 | Period 4 | Period 5 | Period 6 | Period 7 | Period 8 | Period 9 | Period 10 | Period 11 | Period 12 | | | | | | | |
| air truck | cost | 15 9 3 | 0 | Capacity: 500 | Gross requirement | 400 | 484 | 532 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | |
| | | | | | Schedule receipts | | | | | | | | | | | | | | | |
| | | | | | Projected available 400 | | -40 | -84 | -532 | -586 | -644 | -709 | -638 | -574 | -517 | -465 | -419 | -377 | | |
| | | | | | Net requirement | -40 | -84 | -532 | -586 | -644 | -709 | -638 | -574 | -517 | -465 | -419 | -377 | | | |
| | | | | | Planned order receipt | 84 | 532 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | | |
| | | | | | Planned order release | 84-532 | 586 | 644 | 709 | 638 | 574 | 517 | 465 | 419 | 377 | | | | | |
| | | | | | Forecast (markets) | | | | | | | | | | | | | | | |
| | | Initial Forecast (each store) | Actual Demand with period 4 | Forecast (each store) | | | | | | | | | | | | | | | | |
| air truck | cost | 15 9 3 | 0 | Capacity: 500 | Period 0 | 2000 | 400 | 2000 | | | | | | | | | | | | |
| | | | | | Period 1 | 2200 | 440 | 2200 | | | | | | | | | | | | |
| | | | | | Period 2 | 2420 | 484 | 2420 | | | | | | | | | | | | |
| | | | | | Period 3 | 2642 | 532 | 2642 | | | | | | | | | | | | |
| | | | | | Period 4 | 2824 | 586 | 2824 | | | | | | | | | | | | |
| | | | | | Period 5 | 3121 | 644 | 3121 | | | | | | | | | | | | |
| | | | | | Period 6 | 3243 | 709 | 3243 | | | | | | | | | | | | |
| Period 7 | 3388 | 774 | 3388 | | | | | | | | | | | | | | | | | |
| Period 8 | 3574 | 844 | 3574 | | | | | | | | | | | | | | | | | |
| Period 9 | 3782 | 919 | 3782 | | | | | | | | | | | | | | | | | |
| Period 10 | 3924 | 995 | 3924 | | | | | | | | | | | | | | | | | |
| Period 11 | 4092 | 1071 | 4092 | | | | | | | | | | | | | | | | | |
| Period 12 | 1880 | 377 | 1880 | | | | | | | | | | | | | | | | | |

From the SCM1 lessons, we applied the idea that we should plan based on 1.5 times the cumulative lead time as well as about MRP, MPS and DRP. This helped us get a better sense of when we actually needed to place orders.

- **Major decision or change in this period:**

| | Decision | Rationale |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 18,804 by land, Linotex: 12,880 by land, Seatex: 0 | Furthermore, the demand is seeing a rise right now, indicating high demand for the next five periods. This scheduled purchase will help us serve as many customers as possible while generating the greatest possible profit, as reflected in our MRP calculations. |
| Production | 2000 units | Max production with available raw materials |
| Downstream | Transport finished products: Albali: 400 by land Izar: 400 by land Polis: 400 by land Saffar: 400 by land Local store: 400 | Desire to satisfy the greatest services for customers with available finished products |

Period 2:

- **Main problems:**

We kept following the initial plans but we found out we did not count in the waiting time before production.

- **Overall strategy:**

We recalculated our original DRP, production plan, and MRP to adjust the planned order quantity and order time.

- **Apply knowledge from the learning courses:**

From the SCM1 lessons, we learned that it is important to have accurate time-phasing of requirements and to correctly offset for lead time.

- **Major decision or change in this period:**

| | Decision | Rationale |
|-------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 38,640 by land, 18,804 by air Linotex: 0 Seatex: 25,104 by land, 25,336 by air | Because we identified the mistake, we recalculated the 12-period DRP, production plan, and MRP to forecast and plan in a way that better meets customer needs and responds to future demand. |
| Production | 2000 units | Max production with available raw materials |
| Downstream | Transport finished products: Albali: 400 by land | Desire to satisfy the greatest services for customers. |

| | | |
|--|------------------------------------------------------------------------------------|--|
| | Izar: 400 by land Polis: 400 by land Saffar: 400 by land Local store: 400 | |
|--|------------------------------------------------------------------------------------|--|

Period 3:

- Main problems:

When we calculated material L in the MRP, we chose to ship by truck, but we mistakenly kept a lead time of 1 week in the schedule (which was the lead time for air). We should have put 4 weeks instead, which is the correct lead time for truck delivery.

- Overall strategy:

We had a problem of the overcapacity of the raw materials warehouse, so we tried to calculate the costs between renting the warehouse and warehouse expansion, not only for the current period, but for future periods as well. And then we wanted to rent and build multiple warehouses to reduce our cost to solve the emergency.

- Apply knowledge from the learning courses:

From the Beer Game – Bullwhip Effect lesson, we realized that recovering from this kind of situation usually takes a few periods. In our case, it might take around four periods, so roughly until period 7.

We also think another possible solution in real life could be subcontracting. If we had a good relationship with the supplier of Linotex, we might be able to ask them for extra support.

- Major decision or change in this period:

| | Decision | Rationale |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 33,324 by land, 18,852 by air Linotex: 12,552 by air Seatex: 25,760 by land | Because we placed the wrong order, we attempted to correct it by switching the upcoming urgent demand to air, while keeping the originally planned subsequent orders by truck. |
| Production | 1,600 units | Because we previously made the mistake of under-ordering to Linotex, our maximum production capacity was limited to 1,600. |
| Downstream | Transport finished products: Albali: 400 by land Izar: 400 by land Polis: 400 by land Saffar: 400 by land Local store: 400 | Desire to satisfy the greatest services for customers. |

Period 4:

- Main problems:

Due to the shortage of Linotex, we could not produce any products (0/3370 units of production), and we also faced the problem of overcapacity of raw material warehouses (Biotex and Seatex).

- **Overall strategy:**

Actually, we would need 40,100 units to fully deal with the overcapacity issue in our current warehouse, which is limited to 54,000 units. However, we found out that we can only rent 4,000 extra units and build another 4,000-unit expansion. Even so, meeting customer demand and keeping production running smoothly are more important for us, so we decided to accept the extra cost and prioritize these needs.

- **Apply knowledge from the learning courses:**

In real life, there is another possible solution: overtime working

- **Major decision or change in this period:**

| | Decision | Rationale |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 29,976 by land Linotex: 8,100 by land, 11,108 by air Seatex: 22,216 by land | Although our raw material warehouse is already over capacity, meeting customer demand is more important, so we continued to place additional orders for Linotex by air to ensure that future production can proceed smoothly. |
| Production | 0 units | Because of our previous calculation error, we did not place the order for Linotex, which made it impossible for us to carry out any production. |
| Downstream | Transport finished products: Albali: 320 by land Izar: 320 by land Polis: 320 by land Saffar: 320 by land Local store: 320 | Because our earlier forecast was incorrect, our available final products decreased, we still aimed to provide the highest level of service to our customers. |

Period 5:

- **Main problems:**

Due to no production from Period 4, we have no finished products in the distributor center. We know we will not reach demand in period 6 which is the highest because we have zero inventories in the distributor center.

- **Overall strategy:**

As stated in the game rules, demand decreases by 10% after period 6, so we updated our DRP to reflect the lower actual demand from the previous period. In this period, Linotex became available again, allowing us to restart production. At the same time, our over-capacity issue had become severe, so we reduced our orders to lower costs and better control the warehouse situation.

- **Apply knowledge from the learning courses:**

We figured out that learning from the Analytical Tools course if there is a trendy demand it is better to adjust our forecast by each period by taking actual demand from the previous period, which means adjusting our DRP, which will consequently affect the MPS and MRP.

- **Major decision or change in this period:**

| | Decision | Rationale |
|-------------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 0 Linotex: 0 Seatex: 0 | Because we accepted having zero production in period 4 and our raw material warehouse was already over capacity, we calculated that the raw materials we currently have are sufficient to cover the production needs for the next two periods. Therefore, we decided not to place any new orders in order to reduce costs. |
| Production | 3,138 units | We optimized our production capacity to ensure we can respond adequately to future demand. |
| Downstream | Transport finished products: Albali: 0 Izar: 0 Polis: 0 Saffar: 0 Local store: 0 | Because we were unable to produce anything in period 4, we had no finished products available for shipment. |

Period 6:

- Events:

Strike for airplane (affected on the downstream)

- Main problems:

We found out actually there is an economic lot size for transportation. Therefore, after this we consider the lot size for every shipment of raw material and finished products to reduce the logistic cost.

- Overall strategy:

We focused on controlling our over-capacity issues, considering the expected decrease in future demand and taking lot size into account. By reducing our orders and production, we were able to lower our overall costs.

- Major decision or change in this period:

| | Decision | Rationale |
|-------------------|---------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 0 Linotex: 0 Seatex: 0 | Because we were still facing raw material over-capacity and the quantities we currently have are sufficient for upcoming production needs, we decided not to place any new orders in order to reduce costs. |
| Production | 2000 units | Although we had a maximum production capacity of 3,370 units, we did not produce at the maximum level because we expected future demand to decline, and our distribution center was already over capacity. |

| | | |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Downstream | Transport finished products: Albali: 500 by land Izar: 500 by land Polis: 500 by land Saffar: 500 by land Local store: 1138 | Although we were over capacity with finished products, sending more would create the same problem at the store, so we decided to ship only the maximum capacity that the store could hold. For Polis, due to the strike, we could not ship by air, which caused us to lose customers in period 7. We also took the economic lot size for transportation into consideration when making these decisions. |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Period 7:

- **Events:**

Max production: 2000 units

- **Overall strategy:**

We change our strategy - we focus more on the real situation (real results from the previous period to analyze our next steps). We do the analysis from downstream to upstream.

- **Apply knowledge from the learning courses:**

According to SCM session 4, an important objective of MRP is to keep order priorities current.

- **Major decision or change in this period:**

| | Decision | Rationale |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 0 Linotex: 8,000 by land, 8,800 by air Seatex: 5,088 by land | Because the quantities of Biotex, Linotex, Seatex currently in the warehouse were not proportional, we used the future demand forecast to recalculate the required amounts of each raw material. |
| Production | 2000 units | We were facing over-capacity issues in the distribution center, and at the same time, we knew that demand would decline while we still had stock in transit. In addition, the event imposed a 2,000-unit maximum limit, so we decided to produce only 2,000 units. |
| Downstream | Transport finished products: Albali: 280 by land, 500 by air Izar: 280 by land, 500 by air Polis: 500 by land Saffar: 180 by land Local store: 448 | We used the current demand forecast to allocate shipments for the upcoming periods. If truck deliveries would not arrive in time, we switched to air shipments. At the same time, because we were over capacity with finished products, we dispatched any truck shipments that could be sent early to address demand further into the future. |

Period 8:

- **Events:**

Max production: 2000 units

- **Overall strategy:**

Because we started to generate profit and our market share increased in this period, it shows that we are moving in the right direction. Moreover, our service level improved significantly. Our costs are decreasing and the capacity issue is gradually improving. Therefore, we decided to maintain the same strategy, using the real results from the previous period and the current situation to analyze our next steps.

- **Major decision or change in this period:**

| | Decision | Rationale |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 24,000 by land Linotex: 8,000 by land Seatex: 16,776 by land | We continued to place orders based on the Biotex, Linotex, Seatex proportions while also considering the current quantities available in the warehouse. |
| Production | 1,997 units | We utilized our maximum production capacity. At the same time, we were unaffected by the event. |
| Downstream | Transport finished products: Albali: 0 Izar: 200 by land Polis: 480 by land Saffar: 400 by land, 480 by truck Local store: 440 | We used the finished products we had on hand to fulfill demand starting from the nearest periods, switching to air if truck deliveries could not arrive in time. The remaining quantities were allocated to cover demand in the more distant periods. |

Period 9:

- **Main problems:**

We realized that we should have shipped the order of Linotex by truck in period 6, but at that time our priority was controlling warehouse capacity.

- **Overall strategy:**

Our company is performing better now, and we can start ordering the correct quantities of raw materials. Therefore, we continued placing raw material orders according to the required proportions, maintained production levels based on the forecasted demand, and used the finished products to first fulfill the nearer periods. The remaining quantities were then allocated in advance to prepare for the more distant future demand.

- **Major decision or change in this period:**

| | Decision | Rationale |
|-------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 24,000 by land Linotex: 8000 by air Seatex: 16,000 by land | We continued to ship Biotex and Seatex by truck to meet future demand and reduce transportation costs. Since we will have a shortage of Linotex in period 11, now we have to send Linotex by air to support the production. |
| Production | 2,200 units | We noticed that sales were decreasing, but at a slower rate than we expected, so we increased our production to meet market demand. |

| | | |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Downstream | Transport finished products: Albali: 280 by land, 90 by air Izar: 90 by air Polis: 300 by land Saffar: 560 by land Local store: 677 | We first used our available finished products to satisfy the demand of the nearest periods, and switched to air shipments whenever truck deliveries would arrive too late. Any remaining quantities were then allocated to meet demand in the later periods. |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Period 10:

- **Events:**

Transport Biotex by air will be reduced by 6000 units

- **Overall strategy:**

Because we are now back on the right track, we decided to continue with our previous strategy.

- **Major decision or change in this period:**

| | Decision | Rationale |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 24,000 by land Linotex: 8,000 by land Seatex: 14,128 by land | Although there were event restrictions, we did not need to use air shipments, so we were not affected. At the same time, since our warehouse quantities are now aligned, we can place raw material orders in the correct proportions. |
| Production | 1,865 units | We utilized our maximum production capacity. |
| Downstream | Transport finished products: Albali: 318 by land, 430 by air Izar: 318 by land, 130 by air Polis: 400 by land Saffar: 400 by air Local store: 440 | We first fulfilled the market demand of the nearest periods, using air when truck deliveries would not arrive in time while keeping the required quantities in the local warehouse. The remaining products were shipped by truck to meet demand in the later periods. |

Period 11:

- **Overall strategy:** Since we are now moving in the right direction, we chose to maintain our existing strategy.

- **Major decision or change in this period:**

| | Decision | Rationale |
|-------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 24,000 by land Linotex: 8,000 by land Seatex: 14,128 by land | As our stock levels are now in balance, we can proceed with proportionate raw material ordering. |
| Production | 2000 units | We utilized our maximum production capacity. |

| | | |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Downstream | Transport finished products: Albali: 150 by air Izar: 430 by air Polis: 400 by land Saffar: 472 by land Local store: 430 | We adopted the same strategy, fulfilling the demand of the nearest periods first and then meeting the needs of the later periods. |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|

Period 12:

- Main problems:

We realized that we should have shipped Linotex in period 9 to support production in period 14.

- Overall strategy:

As our operations have stabilized, we continued applying the same strategy as before.

- Major decision or change in this period:

| | Decision | Rationale |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Upstream | Bought raw materials: Biotex: 24,000 by land Linotex: 8,000 by land, 7,360 by air Seatex: 14,128 by land | In period 14, we will not have enough raw material Biotex delivered by truck, so we added an air shipment to resolve this issue. As for Biotex and Seatex, we kept them unchanged and continued placing stable truck orders. |
| Production | 2000 units | We utilized our maximum production capacity. |
| Downstream | Transport finished products: Albali: 300 by land, 75 by air Izar: 300 by land, 95 by air Polis: 350 by land Saffar: 400 by land Local store: 497 | We kept the same approach, fulfilling the demand of the nearest periods first and then meeting the needs of the later periods. |

Explanation of the Penalty at the end period:

During Period 7-12, we believed the company was operating well because we focused on fulfilling the demand of the nearest periods, using air shipments later on to cover any shortages. However, this approach was incorrect. Our finished products were not sufficient to support future demand. We should have increased our production earlier to replenish inventory and restore a stable truck-based delivery pattern, which would reduce costs and ensure a consistent supply. In the end, this also meant that we were not able to keep the company running as initially, and we had to pay penalties as a result.

3. Evaluation of Strategy Followed During the 12 Periods

3.1 Initial strategy - period 1 to Period 4

At the beginning of the game, our team decided to choose a strategy focused on maximizing customer satisfaction by meeting demand at the maximum level. To achieve this, we mainly relied on truck deliveries, but used air shipments to ensure smooth future production and to correct ordering inaccuracies; and we set production at the maximum available capacity of 2000 units per period, keeping this level during the first four periods. Forecasts were prepared for the entire market and each of the five stores, taking into account known events (10% demand increase from period 1-6, and 10% demand decrease from period 7-12; downstream: strike for airplane in period 4 or 5 or 6 causing 1 week delay; period 7 and 8 with maximum production of 2000 units for 2 periods; upstream (B material only): malfunction in period 9 or 10 (occurs once) that leads to reduction by 6000 units)), and these forecasts were transferred into DRP for finished products, MPS for production planning, and MRP for raw materials.

However, errors in data entry prevented the strategy from execution: in Period 2 we failed to account for the one week waiting time before production in MRP, and in Period 4 we mistakenly entered the lead time for air transport while choosing truck as the mode of transportation, which forced us to stop production. During these periods, our focus remained on demand fulfillment rather than cost efficiency, meaning that production, transport, purchase, and warehouse costs, as well as capacity limits, were not considered. Although we initially intended to follow a combination strategy in our production planning strategy to have more adaptability in changes of the demand, in practice our approach appeared to be a chase strategy, producing directly in response to demand. The following paragraphs explain the actions we undertook in the beginning for upstream, downstream and production activities.

Upstream

Our team decided to order raw materials to support maximum production capacity (3370 units). We decided to choose the delivery by truck. However, errors in MRP inputs (waiting time before production was not considered, incorrect lead time entry for truck vs. air) created mismatches between planned and actual material availability. Result: upstream planning was intense and service-oriented but lacked accuracy in data entry and capacity awareness.

Production

Production was set at the maximum available level (3370 units per period) in order to match demand in full. This reflected a chase production planning strategy in practice, despite the initial decision to follow a combination strategy. The focus was on customer satisfaction rather than cost efficiency or warehouse capacity. Miscalculations in MRP (waiting time and lead time miscalculations) caused misalignment, ending with no production in Period 4. Overall, production planning was demand-driven but was at risk to upstream inaccuracies.

Downstream

Customer satisfaction was prioritized: shipments were aimed to meet demand at the maximum level. Truck transport was generally preferred, but air shipments were combined when necessary to satisfy urgent demand. However, warehouse and inventory capacities were not considered, leading to extra costs and delays that were not visible. When upstream errors imposed zero production, downstream operations collapsed, resulting in unmet demand and

stockouts. Downstream strategy was highly responsive but fragile, dependent on flawless upstream and production execution.

3.2 Adjustment of Strategy - Period 5 to Period 12

Evaluation of strategy

From period 5 to 12, our team's strategy evolved from aggressive demand-chasing to a more cautious and adaptive chase strategy. The following strengths of an updated strategy were identified: improved forecasting, more realistic production levels, and better decisions on the choice of the transportation. However, the weaknesses were identified too: continuous inefficient management of capacity, costly emergency storage, and penalties from transport inefficiencies. The outcome of the strategy was that our team maintained a strong customer focus but learned that reactivity must be balanced with accurate data inputs, warehouse capacity limits, and transport optimization to achieve successful performance. The following paragraphs explain the undertaken strategy in more detail in relation to upstream, production and downstream activities.

Upstream

Raw materials management shifted from aggressive ordering to cautious use of existing stock, due to warehouse overcapacity (max 8000 units). Forecasting became more dynamic: DRP was adjusted once in period 5 based on actual demand, while still considering long-term events (10% demand decline after period 6). Transportation choices were made more carefully: air was used for urgent replenishment, trucks for cost efficiency, but penalties arose when truck loads were not optimized. Overall, upstream planning improved, but capacity mismanagement and emergency storage costs remained ongoing issues.

Production

Production was no longer fixed at maximum capacity - instead, it was adjusted to avoid warehouse overstock. The chase strategy continued, but with more attention to real demand results and forecast adjustments. Economic lot size influenced production and shipment planning, though capacity constraints were still overlooked at some times. In later periods, production focused on balancing real-time demand with longer-term availability, showing a shift toward better organized planning.

Downstream

Customer satisfaction remained the core value, but disruptions (air strike, penalties) made the supply chain less reliable. Distribution planning was improved: shipments were aligned with actual demand, and transportation mode was chosen based on urgency and cost. In later periods, the priority for distribution flows was near-term customer demand, while avoiding the excess supplies with longer deliveries by truck. By Period 12, downstream strategy stabilized, matching demand with available stock. Therefore, at the end our team was able to return to the initial numbers for the raw materials of the first period, as was stated in the rules of the game.

3.3 End game strategy

Overall assessment of the strategy

In the beginning our team initially aimed to follow a combination strategy, balancing stable production with adaptability to demand changes. However, in practice, throughout periods 1 to 12, our team consistently pursued a chase strategy, producing and shipping in direct response to demand fluctuations. Production was adjusted to match demand as closely as possible. Customer satisfaction was prioritized over cost efficiency, capacity limits, and penalties. Forecasts were updated dynamically, but errors in lead time inputs, warehouse capacity, and transport rules reduced effectiveness.

The requirement of the end game was to match the initial situation in the last period 12 to period 1. Our team extended forecasts to period 14, but the decision to ship by air in Period 13 overlooked the matching rule, which resulted in penalties. This emphasized the importance of aligning tactical decisions with overall game rules and constraints.

Ideal scenario if game was re-played

If we were to replay the game, our future actions would be organized across upstream, production, and downstream decisions, as described below.

Upstream: We would order raw materials in economic lot sizes aligned with warehouse capacity and use MRP with accurate lead times (truck vs. air) to avoid mismatches. Updating the demand forecast in each period would help us adjust more effectively.

Production: We would plan raw material orders with realistic production schedules, regulate output to avoid overcapacity, and include capacity constraints into MPS to avoid emergency storage costs. Steady production with flexible adjustments would keep operations more stable.

Downstream: We would maintain a chase strategy by matching supply with demand, ensuring smooth flow and avoiding excess inventory while improving overall performance.

APPENDIX

Feedback and lessons learned

Challenges

During the game, our main challenges were understanding the overall flow at the start, as too much information was shared in a short time, making the first rounds mainly trial-and-error. In period 3, we miscalculated lead time by choosing truck transport but applying the shorter air lead time, which created excess inventory and prevented procurement in the next periods. Additionally, overlooking penalty costs early on resulted in a financial penalty at the end. These issues highlighted the difficulty of figuring out the rules at the beginning and how early mistakes affected later results.

Insights

During the game, we learned that managing raw material quantities, production capacity, and lead times is critical for maintaining smooth operations. A key strength was our decision to forecast and schedule major events in advance, including demand fluctuations, air strike, production limits, which helped us anticipate disruptions. The game was very practical, allowing us to apply theoretical knowledge in a realistic setting and see the direct impact of our decisions. We also realized that teamwork and clear communication are essential, and that dividing responsibilities - such as assigning individuals to production, DRP, or MRP planning - improves coordination and efficiency. These insights highlighted the importance of planning and collaboration in supply chain management.

Future actions in a professional environment

In a similar professional environment, our future actions would focus on applying the lessons learned from the game: we would carefully plan and monitor operational decisions to ensure efficiency, and pay close attention to inventory levels, capacity, and lead times. We would strengthen forecasting and getting ready for potential challenges, while emphasizing teamwork and clear communication to coordinate responsibilities effectively. By following this strategy, we would be better prepared to balance costs, maintain smooth operations, and deliver value to customers.

Recommendations to improve the course

To improve the game experience, a more step-by-step explanation of the rules with slightly more time dedicated at the start would help participants feel more confident to play the game and apply the concepts effectively. It could also be valuable if some guidance was provided in relation to the usage of planning tables for MRP, DRP and production.