**VRIJE UNIVERSITEIT BRUSSEL**

**Faculty of Economic, Social and Political Sciences and Solvay Business School**



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The Fresh Connection: Strategy of the Belatvindo team

**MSc in Management**

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# Strategy of the Belatvindo team

|  |  |
| --- | --- |
| Round | ROI |
| 1 | **-35.91 %** |
| 2 | **-1.50 %** |
| 3 | **2.38 %** |
| 4 | **-1.94 %** |
| 5 | **3.61 %** |
| 6 | **1.87 %** |

*Before we started playing the game, we developed our strategy for the whole team: LOW-COST STRATEGY. Soon enough, we realized that this strategy was not always possible or the most appropriate method. Because it is important to receive the material on time and with a sufficient quality, we sometimes deviated from this strategy. Besides, in the last rounds we tried to lower our CO2 emission as much as possible to avoid penalties.*

# Strategy of Purchasing (P. Coppens & A. wouters)

|  |  |  |
| --- | --- | --- |
|  | **Decisions – LOW COST STRATEGY** | **Lessons learned** (P*ractically no recommendations generated by the system regarding actions to be taken)* |
| **1** | Criteria for consideration and selection of suppliers:   * Quality: minimum middle or highMaximum rejection % at quality control: < 4% * Lead time: maximum 30days * Reliability: objective to obtain a delivery reliability in practice of minimum 90% (in line with Sales Department) * Package: bulk purchasing to reduce the unit price per item * Contract index: as low as possible and preferable less than 1.000   => calculations were done, price/quality ratios were evaluated for the several suppliers, also taking into account the importance of the component in purchase value/order size, the free capacity of the suppliers,… | It isn’t always the best thing to go for the lowest cost. The decision to choose the cheapest package (order size of a tank for Vitamins), led to dramatic results. The obsoletes % was too high. As a consequence, 1) our ROI was strongly negative, 2) sufficient stock for next rounds (not opportune to change supplier).  Moreover, our ‘cheap’ supplier Tampa Fruits was significant less reliable than we agreed to.  The reliability % and rejection % for PET were still quite high despite the choice for another supplier. There were also problems observed in supply chain. |
| **2** | * The opportunity to change to cheaper suppliers was investigated as function of the low cost strategy and with the possibility to negotiate about more properties.   Smurfat Kippa for example is cheaper than the current principal supplier Brit Pack. So, in the long term it could be interesting to contract Smurfat Kippa. However, there is no experience with this supplier and thus a risk of additional costs (2x terminating a contract) in case the supplier does not meet the requirements. There was chosen to continue with Brit Pack because of the very good reliability so far and the smaller lead time.   * PET: Reconsideration of delivery window, reliability, quality,… * Mango: Choice for a more expensive but more reliable and certified supplier, Dalima. * Order size of packaging material was carefully investigated to order just the amount we needed (Mango: IBC, Vitamins: Drum). * Payment terms were raised to the maximum of 8 weeks (exception: vitamins which are not the principal raw materials with a quite low % of the total purchase value => 4 weeks to obtain a contract index of 1.000) | Even with positive experiences regarding reliability in previous rounds, it can be disappointing in a next round (this was for example the case for supplier AIL vitamins). ⇨ A margin should be anticipated in the to be negotiated reliability in order to obtain a minimum reliability of 90%. |
| **3** | * Reconsideration of quality, reliability, payment term,.. in order to obtain better results while we still tried to get the lowest possible contract index. * Evaluation of transport modalities (CO2 emission): choice for boat instead of truck if possible. | Process of evaluation of and negotiating about quality, reliability, payment term,… is a continuous process.  High quality is not a guarantee for a low rejection % (rejection % for PET of > 3%). |
| **4** | * Option of dual sourcing was not chosen because of the low cost strategy. * Choice for iPET in order to lower CO2emission. * Chosen KPI’s: raw material costs, rejection components (%), delivery reliability suppliers (%) | Idem |
| **5** | To improve the reliability of some less reliable suppliers, to further diminish the rejection % and the CO2 emission of some components, a supplier development program was negotiated with the 3 most appropriate suppliers which could benefit from this program. To win back some investment, a lower reliability was agreed. | The supplier development program is not necessarily accepted by the supplier (only 1 of them accepted). The impact of the program has also to be considered in the long term. |
| **6** | VMI was initiated in 3 suppliers with the highest purchase value because of the favorable cost-benefit ratio. It was not considered as a tool to resolve the problem of the lower reliability of some suppliers. In order to meet a minimum reliability, a higher reliability was negotiated. By doing this, the contract index was still profitable. | The impact of initiating the VMI-project has to be considered in the long term. |

# Strategy of Operations (A. Freimane & A. Bouton)

The strategy of Operations was to support the general low cost strategy of our business. Consequently, decisions have been made in order to have efficient use of pallet locations and a sufficient level of production capacity. In addition, the strategy was to invest in projects for improvement to make the production more cost effective.

The main KPI’s used during the game to make the decisions for Operations were Utilization rate bottling line, Utilization rate warehouse, Overflow warehouse and Changeover time. The decisions have been mostly made regarding around the usage pallet places and the usage bottling lines. It means computing the right number of inbound and outbound warehouses based on the weekly demand and safety stock for each component and finished good. Secondly, decisions were made to increase the productivity, reduce the changeovers and the breakdowns. Many options have been chosen to reach these objectives such as the SMED action, little preventive maintenance training, the decrease of the start-up loss usage etc.

**Major decisions by Operations during the game**

Round 1. High availability of components and products brought us to keep our warehouses utilization rate around 80% and we were looking to increase the production plan adherence and increased the number of shifts from 2 to 3.

Round 2. After round 1, changeover time was relatively high with 38,2 hours per week. The SMED action was implemented in order to decrease. The production speed was also increased. A little preventive maintenance was implemented in order to keep the breakdown time low.

Round 3. After the round 2, it was visible that chosen production capacity was too high and not efficiently used as our unused capacity was of 40,6%. This result makes us realize that adding a shift more was not the right decision to take. We decide then to decrease the number of shifts. The SMED action and increased production speed was maintained in order to keep the changeover low.

Round 4. The decision made in round 3 had an important impact as our unused capacity dropped from 40,6% to 9%. After round 3 we maintained the same number of shifts during the rest of the game. As the production batches were still quite small, the start-up productivity loss was quite high (13770 in round 3). In order to decrease it, we decide to make an investment into project to decrease start-up productivity loss.

Round 5. The result after round 4 was not too good as the results impacted by the fact that the company had missed sales and therefore the finished goods warehouse was full. During this round we slightly adjusted warehouse pallet places, but drastic changes for this were not made. To cut production costs and improve sustainability, two projects were implemented to decrease the amount of energy and water used for bottling line cleaning.

Round 6. In the last round Purchasing decided to use VMI for the components. As a consequence, we decided to decrease the inbound warehouse pallet locations. After the round 6, we saw that our cube utilization in raw material warehouse had dropped to 48.6 % and that our pallet location was relatively empty. These results made us to observe that the number of pallet places could have been even more decreased with the VMI.

🡪 One of the aims was actually to stabilize the warehousing and production process over the time. It was possible to find the right balance for the production process. As there were still many changes regarding the sales or purchasing, the optimal and stable level in outbound and inbound warehouses was not reached yet.

**Difficulties in decision making process**

During the game, we faced difficulties about making the right decisions in order to make our return on investment grow. As the different tasks experienced in the game were interrelated, our decisions had to been aligned and/or based on decisions made by other roles: Purchasing, Supply Chain and Sales. As VP Operations we had concerns to make a good estimation of the pallet location that would be necessary during the round. The main objective was to have enough space but not too much in order to have an optimal cube utilization rate. It was noticed that the production lot size was defined by the Supply Chain and not by the Operation which was confusing at some point. To our mind, it was difficult to handle the number of new options which were continuously added each round. Also there was not a full view on the impact of the new features added such as VMI, Sustainability etc. The lack of information about VMI and its impact on inbound and outbound warehouses, led us to take wrong decisions and to not decrease sufficiently the pallet location in order to maintain our ROI stable.

**Lessons learned**

The game required to a work in team which required a great coordination and communication between the different members of the game. It has been a big challenge to work with six others persons as the decisions had to be made in line with the decisions made by others. It also improved our skills to search and analyse the data. Through the different rounds, we learned how to use the different options available and make progress in our decisions. We think then that if the game had been played a second time, we would be better at making decisions and we will not do the same mistakes.

# Strategy of Supply Chain (a. Darmawan & b. debusschere)

# Strategy of Sales (N. harahap & f. akbar pasaribu)

# Attachments

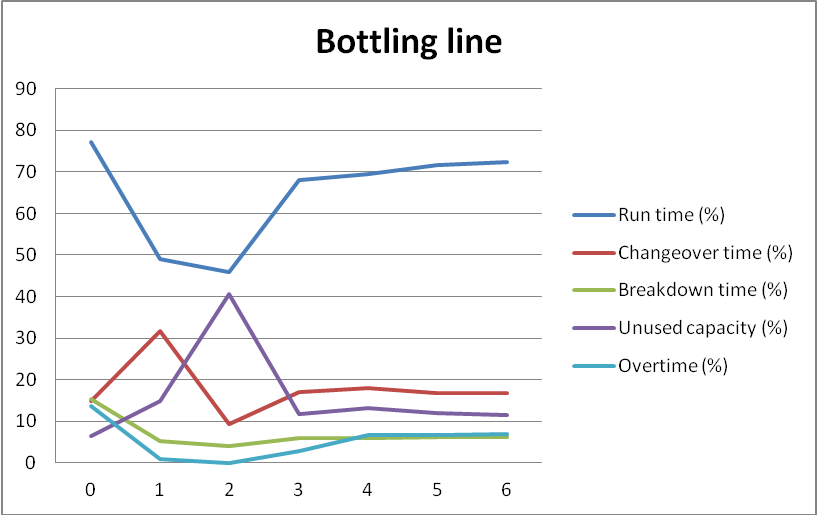
## Overview of analysis for Purchasing

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Component | Round | Supplier | Contract index | Quality | Negotiated reliability | Delivery reliability | Difference in reliability | Rejection (%) | Sup dev (10,000€/year) | VMI (5,000€/year) | Purchase value last round | % of the total purchase value | Transport costs last round | Obsoletes (%) |
| Pack 1 liter | 0 | Mono Packaging |  | Middle | 95% | 92,80% | -2,20% | **4,7** |  |  | 109.612 | **1,82%** | 4.103 | 0 |
| Pack 1 liter | 1 | Brit | 0,9900 | High | 90% | **92,70%** | 2,70% | 2,7 |  |  | 101.459 | **1,69%** | 3.191 | 0 |
| Pack 1 liter | 2 | Brit | 0,9968 | High | 90% | **93,00%** | 3,00% | 2,2 |  |  | 105.518 | **1,75%** | 2.977 | 0 |
| Pack 1 liter | 3 | Brit | 1.0058 | High | 92% | **95,60%** | 3,60% | 2,2 |  |  | 105.510 | **1,75%** | 2.950 | 0 |
| Pack 1 liter | 4 | Brit | 1.0058 | High | 92% | **95,70%** | 3,70% | 2,4 |  |  | 107.848 | **1,79%** | 3.020 | 0 |
| Pack 1 liter | 5 | Brit | 1.0058 | High | 92% | **96,20%** | 4,20% | 2,3 | No |  | 111.228 | **1,85%** | 3.223 | 0 |
| Pack 1 liter | 6 | Brit | 0.9981 | High | 91% | **93,80%** | 2,80% | 2,9 | No | Yes | 112.019 | **1,86%** | 3.496 | 0 |
| PET | 0 | Trio PET |  | **Poor** | 94% | 84,30% | **-9,7%** | **5,8** |  |  | 290.919 | **4,83%** | 130.182 | 0 |
| PET | 1 | Plantin | 0,9830 | Middle | 95% | **93,70%** | -1,30% | **4,0** |  |  | 258.030 | **4,29%** | 102.523 | 0 |
| PET | 2 | Plantin | 1.0008 | High | 97% | **92,30%** | -4,70% | 3,5 |  |  | 262.832 | **4,37%** | 103.183 | 0 |
| PET | 3 | Plantin | 0.9974 | High | 98% | **94,50%** | -3,50% | 3,2 |  |  | 257.352 | **4,28%** | 101.282 | 0 |
| iPET | 4 | Plantin | 0.9994 | High | 98% | **96,60%** | -1,40% | 2,6 |  |  | 289.857 | **4,82%** | 103.498 | 0 |
| iPET | 5 | Plantin | 0.9964 | High | 96% | **93,80%** | -2,20% | 1,0 | Yes => accepted | Yes (BUT RELIABILITY much lower than agreed!) | 292.378 | **4,86%** | 104.644 | 0 |
| iPET | 6 | Plantin | 0.9957 | High | 99% | **98,90%** | -0,10% | 1,3 |  |  | 297.225 | **4,94%** | 106.979 | 0 |
| Orange | 0 | Miami |  | High | 98% | 98,00% | 0,00% | 1,1 |  |  | 400.817 | **6,66%** | 31.365 | 0 |
| Orange | 1 | Miami | 0,9790 | High | 93% | **91,20%** | -1,80% | 0,0 |  |  | 369.547 | **6,14%** | 29.403 | 0 |
| Orange | 2 | Miami | |  |  | | --- | --- | |  |  |   0.9841 | High | 93% | **92,00%** | -1,00% | 1,3 |  |  | 389.243 | **6,47%** | 30.883 | 0 |
| Orange | 3 | Miami | 0.9981 | High | 97% | **95,90%** | -1,10% | 1,2 |  |  | 386.884 | **6,43%** | 30.375 | 0 |
| Orange | 4 | Miami | 0.9981 | High | 97% | **95,50%** | -1,50% | 1,4 |  |  | 395.287 | **6,57%** | 31.133 | 0 |
| Orange | 5 | Miami | 0.9961 | High | 96% | **94,50%** | -1,50% | 1,6 | Yes => **NOT accepted** | No | 407.359 | **6,77%** | 32.145 | 0 |
| Orange | 6 | Miami | 0.9841 | High | 98% | **98,10%** | 0,10% | 1,8 |  | Yes | 408.792 | **6,79%** | 33.301 | 0 |
| Mango | 0 | NO8DO |  | High | 96% | 93,70% | -2,30% | 1,7 |  |  | 81.947 | 1,36% | 3.023 | 0 |
| Mango | 1 | Tampa | 0,9567 | Middle | 95% | 87,80% | -7,20% | 0,0 |  |  | 70.379 | 1,17% | 2.937 | 0 |
| Mango | 2 | Dalima | 1.0211 | Middle | 95% | **92,60%** | -2,40% | 3,5 |  |  | 78.794 | 1,31% | 2.890 | 0 |
| Mango | 3 | Dalima | 1.0196 | Middle | 95% | **92,30%** | -2,70% | 4,4 |  |  | 76.815 | 1,28% | 2.087 | 0 |
| Mango | 4 | Dalima | 1.0271 | High | 96% | **93,90%** | -2,10% | 1,9 |  |  | 77.431 | 1,29% | 2.100 | 0 |
| Mango | 5 | Dalima | 1.0261 | High | 95% | **92,20%** | -2,80% | 1,9 | Yes => **NOT accepted** | No | 80.303 | 1,33% | 2.313 | 0 |
| Mango | 6 | Dalima | 1.0271 | High | 96% | **93,80%** | -2,20% | 2,0 |  | No | 80.922 | 1,34% | 2.373 | 0 |
| Vitamin C | 0 | Seitan |  | High | 90% | 80,20% | **-9,80** | 2,3 |  |  | 2.141 | 0,04% | 1.446 | 0 |
| Vitamin C | 1 | AIL | 0,9910 | Middle | 90% | **94,40%** | 4,40% | 0,0 |  |  | 2.694 | 0,04% | 366 | 226,9 |
| Vitamin C | 2 | AIL | 1.0000 | Middle | 90% | **88,40%** | -1,60% | 2,7 |  |  | 1.531 | 0,03% | 792 | 0 |
| Vitamin C | 3 | AIL | |  |  | | --- | --- | |  | 1.0180 | | Middle | 94% | **94,00%** | 0,00% | 2,2 |  |  | 1.593 | 0,03% | 852 | 0 |
| Vitamin C | 4 | AIL | 1.0180 | Middle | 94% | **94,20%** | 0,20% | 1,3 |  |  | 1.653 | 0,03% | 905 | 0 |
| Vitamin C | 5 | AIL | 1.0180 | Middle | 94% | **93,80%** | -0,20% | 1,5 | No | No | 1.823 | 0,03% | 1.055 | 0 |
| Vitamin C | 6 | AIL | 1.0180 | Middle | 94% | **94,00%** | 0,00% | 1,4 | No | No | 1.865 | 0,03% | 1.085 | 0 |
|  |  |  |  |  |  |  |  |  |  | Total | 6.019.607 | 100,00% |  |  |

## Overview of analysis for operatiONS

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Raw materials warehouse | Round | Cube utilization (%) | Overflow (%) | Orderlines per week | Pallets/Tanks per week | Hours per week | Flexible manpower (FTE) | Capacity | Usage |
| 0 | 94.4 | 12.5 | 1.1 | 210.2 | 75 | 0.1 | 900 | 850 |
| 1 | 86.7 | 7.5 | 0.7 | 195.2 | 70 | 0.5 | 1020 | 885 |
| 2 | 76.4 | 6.3 | 0.8 | 200.9 | 69 | 0.7 | 1020 | 779 |
| 3 | 84.6 | 8.5 | 0.8 | 198.2 | 71 | 0.6 | 950 | 804 |
| 4 | 84 | 8.6 | 0.9 | 201.4 | 71 | 0.5 | 950 | 798 |
| 5 | 77.5 | 4.9 | 1.1 | 203.7 | 69 | 0.5 | 935 | 724 |
| 6 | **48.6** | 0 | 1.7 | 206.6 | 60 | 0.3 | 935 | 455 |
| Tankerpark | -2 | 0 | 0 | 0.2 | 1.2 | 0 | 0 | 20 | 6 |
| -1 | 0 | 0 | 0.2 | 1.2 | 0 | 0 | 20 | 6 |
| 0 | 0 | 0 | 0.2 | 1.2 | 0 | 0 | 20 | 6 |
| 1 | 0 | 0 | 0.3 | 1.2 | 0 | 0 | 20 | 13 |
| 2 | 0 | 0 | 0.2 | 1.2 | 0 | 0 | 20 | 6 |
| 3 | 0 | 0 | 0.2 | 1.1 | 0 | 0 | 20 | 7 |
| 4 | 0 | 0 | 0.2 | 1.2 | 0 | 0 | 20 | 6 |
| 5 | 0 | 0 | 0.2 | 1.2 | 0 | 0 | 20 | 6 |
| 6 | 0 | 0 | 0.5 | 1.2 | 0 | 0 | 20 | 3 |
| Finished goods warehouse | -2 | 68.2 | 0.7 | 17.8 | 330.7 | 100 | 0.1 | 1500 | 1023 |
| -1 | 64.8 | 0.4 | 17.8 | 330.7 | 98 | 0.1 | 1500 | 972 |
| 0 | 64.8 | 0.4 | 17.8 | 330.7 | 98 | 0.1 | 1500 | 972 |
| 1 | 22.5 | 0 | 17.8 | 330.7 | 93 | 0.1 | 1150 | 259 |
| 2 | 108.9 | 17 | 17.8 | 332.2 | 120 | 1.4 | 830 | 904 |
| 3 | 96.5 | 9.9 | 17.7 | 334.5 | 109 | 1.1 | 950 | 917 |
| 4 | 99.4 | 9.5 | 17.7 | 330.3 | 112 | 1.2 | 1050 | 1044 |
| 5 | 76.7 | 2 | 47.2 | 345.4 | 106 | 1 | 1100 | 844 |
| 6 | 81.5 | 3.4 | 47.2 | 345.4 | 109 | 1.1 | 1100 | 897 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Round | Run time per week (hours) | Changeover time per week (hours) | Breakdown time per week (hours) | Unused capacity per week (hours) | Overtime per week (hours) | Run time (%) | Changeover time (%) | Breakdown time (%) | Unused capacity (%) | Overtime (%) | Start up productivity loss | Production plan adherence (%) |
| 0 | 61.7 | 11.8 | 12 | 5.2 | **10.9** | 77.2 | 14.8 | 15.4 | 6.5 | 13.7 | 8378 | 76.9 |
| 1 | 58.8 | **38.2** | 6 | 18 | 1.2 | 49 | **31.8** | 5.3 | 15 | 1 | 28708 | 91.4 |
| 2 | 55.2 | 11.3 | 5 | **48.7** | 0 | 46 | 9.4 | 4.1 | **40.6** | 0 | 11676 | 90.3 |
| 3 | 54.5 | 13.7 | 5 | 9.4 | 2.3 | 68.1 | 17.1 | 6 | 11.7 | 2.9 | 13770 | 87.1 |
| 5 | **57.3** | 13.5 | 5 | 9.5 | 5.3 | 71.7 | 16.9 | 6.3 | 11.9 | 6.7 | 6930 | 83.9 |
| 6 | 57.9 | 13.5 | 5 | 9.3 | 5.6 | 72.3 | 16.8 | 6.3 | 11.6 | 7 | 7073 | 75.4 |



|  |  |  |
| --- | --- | --- |
| Mixer Fruitmix MQ | | |
| Round | Cleaning time (%) | Average lot size |
| -2 | 14,4 | 11025 |
| -1 | 14,5 | 11026 |
| 0 | 14,5 | 11026 |
| 1 | 34,1 | 9322 |
| 2 | 17,9 | 10725 |
| 3 | 21,3 | 10475 |
| 4 | 21,7 | **10449** |
| 5 | 20,2 | 10529 |
| 6 | 20 | 10609 |