

JCT2 Supply Chain Task 1

A)

Balanced Scorecard

Cumulative industry results for last four quarters ending in quarter: 4				
	Minimum	Maximum	Average	Lean Computers
Total Overall	0.00	1,099.80	36.70	43.47
Financial Performance	-50.53	237.10	30.67	82.51
Market Performance	0.00	0.74	0.30	0.34
Marketing Effectiveness	0.00	0.82	0.63	0.75
Investment in Future	0.00	34.81	1.59	1.38
Wealth	-10.17	5.67	1.34	2.63
Human Resource Management	0.00	0.82	0.65	0.76
Asset Management	0.00	2.36	1.06	1.57
Manufacturing Productivity	0.00	1.00	0.70	0.51
Financial Risk	0.00	1.00	0.87	0.93

Balance Sheet				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Current Assets				
Cash	284,200	1	881,108	6,592,472
+ 3 Month Certificate of Deposit	280,000	0	0	0
+ Finished Goods Inventory	0	453,120	181,410	39,867
Long Term Assets				
+ Net Fixed Assets	1,100,000	3,054,167	2,925,000	3,895,833
= Total	1,664,200	3,507,288	3,987,518	10,528,172

Debt				
+ Emergency Loan	0	1,322,557	0	0
Equity				
+ Common Stock	2,000,000	3,000,000	4,000,000	4,000,000
+ Retained Earnings	-335,800	-815,270	-12,483	6,528,172

Income Statement				
	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Gross Profit				
Revenues	0	2,313,500	7,956,130	26,079,400
- Rebates	0	50,850	228,800	882,100
- Cost of Goods Sold	0	1,250,476	4,025,411	13,948,137
= Gross Profit	0	1,012,174	3,701,919	11,249,163
Expenses				
Research and Development	120,000	0	60,000	60,000
+ Advertising	0	160,929	211,674	387,720
+ Sales Force Expense	0	126,198	265,791	379,230
+ Sales Office Expense	220,000	330,000	220,000	470,000
+ Marketing Research	0	15,000	15,000	15,000
+ Shipping	0	33,216	84,400	217,918
+ Inventory Holding Costs	0	45,312	18,141	3,987
+ Excess Capacity Cost	0	735,156	1,822,219	247,699
+ Depreciation	0	45,833	129,167	129,167
= Total Expenses	340,000	1,491,644	2,826,392	1,910,721
Operating Profit	-340,000	-479,470	875,527	9,338,442
Miscellaneous Income and Expenses				

+ Other Income	0	0	0	0
- Other Expenses	0	0	0	0
= Earnings Before Interest and Taxes	-340,000	-479,470	875,527	9,338,442
+ Interest Income	4,200	0	0	0
- Interest Charges	0	0	72,741	0
= Income Before Taxes	-335,800	-479,470	802,786	9,338,442
- Loss Carry Forward	0	0	802,787	12,483
= Taxable Income	0	0	0	9,325,959
- Income Taxes	0	0	0	2,797,788
= Net Income	-335,800	-479,470	802,787	6,540,655
Earnings per Share	-17	-15	19	158

(B)

I would first like to comment that the simulation was somewhat hard to follow and provided limited control of the parameters. I suppose this had to be in order to get standardized results. That being said, my performance definitely should have been better. I ended the game with 16% of the workhorse market, 10% of the Mercedes market, and 100% of the Traveler market, equating to a total market share of 29%. My earnings per share were -17, -15, 19, and 158. Considering the number of competitors, this is not a terrible number; however, my competitive nature pushes me to be the best. My balanced scorecard numbers were just above average mostly due to a very slow start. I say this because my fourth qtr balanced scorecard numbers are nearly double the average. Unfortunately I was still far below the highest numbers.

Qtr 2 results had me at 25% total market share. I found that by not choosing the enhanced keyboard, my Mercedes model was not up to acceptable standards. I saw nothing in the parameters that pointed to me that this was a minimum requirement for the Mercedes - c'est la vie. Because I had inventory, I could not "tweak" my Mercedes model rather I was forced to create a whole new product with another \$60,000 R&D fee. I don't believe this to be realistic. Adding a different keyboard to a computer is not like retooling an engine

manufacturing line. Anyway I made the change and moved on. I adjusted my ads based on the success of my competitors. I researched what was working for them and tried to duplicate the best I could.

Qtr 3 results had me maintaining a 25% market share. I believe this to be luck as my balanced scorecard was substantially below average. My end of period cash flow was \$881, 108 as opposed to \$1 at qtr 2 end.

Final results showed improvement ending with 29% market share but that number is very deceiving. I got crushed in the Workhorse and Mercedes markets from 30% and 28% highs respectively to 16% and 10% respectively. My saving grace was that I was the only one to build and sell Travelers (100% of market) in qtr 4. My biggest downfall was not “keeping up with the Joneses” as I did not see the tech advancement opportunities available until after the simulation was complete. Thanks goodness for the Traveler model!

(B-1)

I didn't utilize budgets and pro forma statements in qtr 1 and consequently had to procure an emergency loan just to stave off bankruptcy. Because management should always be looking ahead, budgets and pro forma statements to predict how we are going to do next qtr, next year, and beyond. We need to know how profitable each product and/or division will be going forward so we can make strategic adjustments.

The pro forma cash flow statement enables us to formulate the operating budgets for future years. By knowing how much cash we are going to have enables us to plan for marketing, expansion, recruitment, and other activities to maximize profit. For example, allocating heavily to advertising the first year may be necessary if research shows it will boost sales in year two or to capital investment if research shows increased sales in year three will require expansion of the manufacturing facility.

(B-2)

The simulation assumes the production facility has been built with the best principles of lean manufacturing in mind. The goal of lean manufacturing is to produce error free products, Unknown (No date).

“The goal of lean manufacturing is to produce only the quantity of goods that is demanded by customers. This is accomplished via the pull manufacturing system. That is, if brand A is being pulled out of the warehouse at a faster rate by customers than Brand B, then A should be produced more often than B. There is no need to produce large quantities of Brand B because it is in less demand.

The advantage of the pull system is that there is no need to precisely forecast the demand for any single brand, just the total assortment of brands. If certain brands are sold more often than others, then the factory will produce those brands in larger quantities.

The pull system avoids the age-old problem of forecasting at the brand level. All brand forecasts will be wrong. There will either be more demand than expected or less. The forecasts will never be just right.

Thus, the task is to forecast total demand, without worrying about individual brands. Of course, there is still risk in forecasting total demand, but at least it is distributed across the assortment of brands.

Another critical aspect of lean manufacturing is the decision to send workers home if there is no immediate need for what they could produce. This is probably a surprising aspect of modern manufacturing practice.

Lean manufacturing practitioners argue that it is better to send workers home with full pay than to continue the production and storage of inventory. This line of thinking is counter-intuitive to many people. Is it not better to run the production line and keep employees working for the money they are being paid? In most cases, the answer is no? There are four main reasons for this conclusion.

First and foremost, excess inventory uses up cash. Building inventory takes money out of the bank and puts it in boxes in the warehouse. Money is expensive and difficult to obtain. Few firms have surplus cash sitting in the checking account.

Second, inventory is composed mostly of material cost and only a small amount of labor and overhead. For example, the materials cost of a microcomputer might represent 70% to 80% of the final cost of goods. Labor and overhead might represent only 20% to 30% of the cost. While you cannot delay the labor and overhead costs, the materials cost can be delayed to a later time when demand is better understood or anticipated.

Third, there is the risk that the market may not desire a new brand. In the early stages of a business, there is considerable uncertainty about what customers really want. There is a high probability of producing something few customers will buy. To build inventory of an unproven brand, can be a waste of valuable resources.

Last, the products in storage could become obsolete. As time goes by, better products will enter the market and/or customer preferences will change. If a product becomes obsolete, the firm might need to sell the inventory at a steep discount in order to get rid of it and recover some of its cost.

There are circumstances in which the buildup of inventory might be acceptable. If a product has a proven track record and is certain to sell in the future, then small quantities of inventory may not represent much risk.

Furthermore, if production capacity in the next quarter will be insufficient to meet projected demand, then it might be acceptable to build inventory in anticipation of the demand. Of course the better solution would be to add capacity rather than inventory.

The bottom line is that you must apply the basic principles of lean manufacturing in your production facility. Some of the decisions that must be made will make you uncomfortable until you gain some experience and better understand the system.” Unknown (No date). To employ just-in-time and lean operations, we must first determine which brands to produce for the quarter. We must create a system that exposes problems (visual) through 5S, one piece flow, pull system, inventory reduction.

By using Just-in-time and lean principles we produce the right defect free product, on time, in the proper quantity, and at the right cost to satisfy the customer. Lean allows to eliminate cost draining waste from production, especially the worst of all – overproduction. As shown above, by carrying an inventory, I had to develop a new product rather than “tweak” an existing product. This is the mother of all waste.

(B-3)

Part of just-in-time and lean manufacturing is the work cell concept. Work cells are cells set up with a specific process time designed in. Overall demand is total daily output divided by the hours of operation. For example, $25\text{units}/8\text{hrs}$ or $25\text{units}/480\text{min} = 18$ minutes per work cell (to allow a small buffer for issues). Each work cell must be designed to perform 18 minutes of process time. Total number of work cells = total process time/18 minutes. Level production in this manner allows each work cell to work to the 18 minute pulse schedule – meaning at the 18 minute mark you should be done with your part of the process and handing off to the next station downstream.

(B-4)

I never had a stock out in any of the qtrs but I carried too much inventory in qtr 1. It caused R&D cost by having to develop a new product rather than just “tweaking” the current product. Also, cost in “wasted sales” from having to dump the unwanted inventory at a reduced price. As mentioned above, overproduction – the mother of all wastes cost my company dearly in the first qtr. Had I been true to just-in-time and lean manufacturing principles, I could have avoided nearly \$120,000 (\$60,000 in R&D and \$58,406 in excess inventory sale) wasted cost. It was a very expensive lesson to be sure.

(B-5)

Continuous improvements is a critical part of a good business. As I learned from the simulation, my competitors are always striving to get better. If I don't at a minimum keep pace with that, I will be driven out of business. Case in point, General Motors for many years dominated the automotive industry but failed to keep up with the world competition, specifically, Toyota. They required a government bail-out to keep from closing their doors.

To meet the need for continuous improvement a system needs to be in place which sets a standard for current condition (the way we do business today); provides a method for improvement suggestions from employees (that they would then implement the change); a kaizen tech to oversee the system (track implementation of accepted improvement ideas); reward for improvement suggestions; and constant improvement to the kaizen system.

References

Unknown. (No date). Manufacturing - Quarter 2. In *Web Marketplace Business Simulator*. Retrieved June 12, 2011, from <http://cm11.marketplace6.com/engine.php>.