

Supply chain management case study example

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The Root Beer Game Simulation

In the Root Beer game simulation, I tried to forecast or predict the number of root beer cases to order in order to achieve as low a backlog and unused inventory as possible. Although I noticed that the order from customers was consistently for 100, 000 cases each week and that the supplier delivered 50, 000 cases each week, it was still hard to come up with a more accurate forecast, especially with the delay in deliveries.

Before the order I just placed got delivered, a new demand from customers came in, which added to the backlog. In order to keep the backlog low, I had to order in excess. This allowed me to meet my customers' demand, that is, the backlog was kept low or even none. However, the disadvantage was that I had to keep a high level of unused inventory. In efforts to ensure that I didn't get any backlogs, I had to have an excessive safety stock. While I was able to prevent costs incurred due to the backlog, I still ended up incurring costs due to the excessive inventory. On the other hand, if I tried to order only what I thought was necessary then I ended up with a lot of backlog.

This could be compared to the observation made by Procter & Gamble where they noticed a high volatility of demand on their factories despite their confidence on the stability of consumer demand (Cachon, Randall, & Schmidt, 2007).

At one point in the game, I was able to obtain 0 inventory and 0 backlog after a week, but this was only because, since the game was only on a one-player mode, I was able to predict - after several times of playing the game -

how many cases of root beer the supplier would deliver next. However, this happened only once because in the next week, the number of cases supplied versus the number of cases demanded by the customers got out of sync again.

Playing this game showed me why the bullwhip effect is a major concern for many retailers, distributors, and manufacturers, that is, because it increases the variability in the order process (Manyem & Santos, 1999). In particular, it taught me that it was impossible to come up with accurate forecasts for the customers' demands as well as the amount of stock that the suppliers intended to deliver as I saw only one part of the big picture. Only information about my customers' demands was visible to me and I was unaware about what was happening on the other levels of the supply chain. This puts emphasis on the importance and benefits of having coordination and collaboration mechanisms in place, which would allow the stakeholders in the different levels of the supply chain to negotiate and come up with better ways of synchronizing the supply and demand and be able to come up with better forecasts (Disney, 2009).

The game also showed me the disadvantage of periodic ordering (Lee, Padmanabhan, Whang, 1997). In the Root Beer game, 50, 000 cases were delivered every week. However, the actual demand may be lower or higher than this. As such, the periodic deliveries can result in either increased backlog or excessive inventory. Similarly, if the opposite were to be done, that is, if the demand were exaggerated by ordering excessively in what experts term as rationing and shortage gaming (Carlsson & Fuller, n. d.),

then excessive inventories can result. Although it was not possible in the game, rationing and shortage gaming can also result in a lot of returns and order cancellations.

References

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