FLAKY RETAILER

Retailer Incoming and Outgoing: inconsistency of retailer reactions—erratic orders caused wholesaler to not know what will happen next. This caused the wholesaler to try to compensate for unpredictable future, which became an even bigger compensation after reaching the distributor, putting pressure on the factory to increase production a lot.

PARANOID WHOLESALER

The wholesaler added to every order given by the retailer, presumably to protect himself against future backlog. But he ended up ordering unnecessarily high amounts and caused subsequent players to build up backlog and eventually everyone to build up inventory.

CONFUSED DISTRIBUTOR

The distributor is unsure of what type of order he will get next. He tries to simply meet demand in the beginning, but seeing his backlog rising and no end in sight for high orders, he sends a 40 penny order in. This type of erratic behavior would not take place in a well-organized chain of production. It only resulted because of inability to communicate and the uncertainty of other players in the game.

Revised since last email:

I produced the following graphs (I assumed you did the factory one):

Retailer Incoming and Outgoing : inconsistencies, up and down, up and down, etc

Wholesaler incoming outgoing: adding onto the retailer’s orders: panic and uncertainty

Distributor I and O: more of the same

Retailer Outgoing and Distributor Outgoing: time delay, and notice in the beginning retailer orders are the higher, but then after a few weeks the distributor has caught up and is adding to what the retailer needs. There is also uncertainty, the huge 40 order.

This is what I think our step by step argument/presentation should be:

This is what happened:

Everyone was doing fine until the retailer received orders of 7 instead of 4 in the 5th week. There was an immediate increase in orders, but of course there was a huge time lapse between ordering and getting those orders filled. So the retailer starts to build backlog, along with everyone else, and gets panicked because she doesn’t know how orders will change in the future. (here insert proof by talking about graph: just show the oscillatory graph of retailer incoming vs outgoing).

With the retailer sending out mixed messages, particularly the two 16 orders after orders of 9, 8, etc, in weeks 13 and 14, the wholesaler doesn’t know what is happening. He adds onto the orders of the retailer, thinking to compensate for his growing backlog as well as fulfilling the orders. He also wants to prevent against future inconsistency by always having more than is asked.

The same pattern can be observed in the distributor’s actions. (here talk about the two graphs of their incoming vs outgoing: they both add to these orders to save themselves.)

A big factor in the huge costs accrued in this game is the fact that there was such a time delay and lack of communication. The time delay made the retailer continue to order more, because she doesn’t what will happen in the future, and so wants to be prepared, and protects herself by ordering more than she needs so that when she does need something, she won’t wait for 10 weeks before getting the order filled. Also, orders are distorted by the time they reach the factory, because middlemen don’t really know what’s happening on the consumer end, and want to protect themselves as well. (this is illustrated by the time delay graph).

Then you talk about the factory (I’m guessing somewhere along the lines of: can accommodate changes in orders quickly because close to products, so didn’t have high costs.) But got inventory piled up because not sure what orders will come in.

Then our conclusion is: everyone’s worried, doesn’t know the future, too much time passes, so people have to protect themselves. In future: get rid of the middlemen or else tell them to listen to the previous orders.

This graph shows that the production requests of the factory closely mimic the combination of incoming mail and backlog.  This reflects the factory’s proximity to the overall supply.

Conscientious Factory

The factory, being closest to production, was able to quickly adjust to changing demands, but the unpredictable nature of those demands hampered ability to limit inventory until near the end of the game. The factory, being reasonably close to the supply, was able to closely follow demands from the distributor. A slight time delay contributed to both backlog spikes and unneeded inventory as demand decreased.