

# Developments In Business Simulation & Experiential Exercises, Volume 20,1993

## The Distribution Channel Game

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### THE GAME

This is an easy-to-use exercise, which demonstrates some of the unanticipated affects of a change in demand upon inventory levels at points in the distribution channel and the capacity levels needed for manufacturing. The exercise works best with 21 participants but can be used with as few as 10. If there are more than 21 in the session or class, they are able to learn by observation and are able to actively participate in the debriefing. Observation of this game is almost as informative as participation. The exercise requires between an hour and an one and one half hours to complete and debrief. It emphasizes that even when every partner in a product's distribution channel behaves in a rational manner, the results may be very detrimental to every one. The participants blame the bad outcome on each other, calling their behavior irrational. The results if fully debriefed causes the participants to question the system and not each other's behaviors.

The exercise uses microcomputers as the example product but other products could be substituted depending upon the participants' experiences. The important characteristic is that the product not require major attention from the reseller. That is the product be only one item in a multi-product category. The game is normally structured with 16 resellers, 4 distributors (each distributor handles 4 resellers) and one manufacturer. Other configurations could be developed and substituted easily. The specific structure depends upon the number of participants. This example is structured for 21 participants.

### THE RULES

The rules of the game are as follows: At the end of each simulated week, the reseller normally orders, from their distributor, the same number of units that they sold during the week. This, however, is not a firm rule. It depends upon the buyer's wishes. If the reseller wants to, he or she may order more or less units than was sold, it depends upon their expectations of future sales. It is normally expected that it will take four weeks for the distributor to deliver the order, but the participants are told that sometimes the truck arrives late and it has been known not to show up at all and miss the entire week's orders. This lack of guaranteed delivery has, at times, occurred at the distributor's level as well. The players are told that two years ago, one of the distributors ran out of inventory during a peak selling time, and as a result, his resellers also ran out of inventory and lost some sales due to being out of stock. They are also told that the history of dealing in this industry has taught the resellers and the distributors to carry about 4 weeks worth of inventory.

At the beginning of the game, each reseller carries a physical inventory of 4 weeks supply. These same rules apply for each distributor and the manufacturer. It takes 4 weeks for the manufacturer to increase production capacity. Price is not a variable in the game. It is simply assumed that price is held constant.

### RUNNING THE GAME

At the start of the simulation, each of the resellers is selling at a constant rate of 4 units per week, and have 16 units in inventory. Each distributor is shipping 16 units per week (4 to each reseller) and has 64 units in inventory. The manufacturer is shipping 64 units per week (16 to each distributor), carries inventory of 256 units, produces at the rate of 64 per week and has a manufacturing capacity of 128 units per week.

In the third simulated week, demand starts to increase at the rate of one additional unit per week per reseller. This increasing rate of sales continues for 4 weeks, until the demand doubles to 8 units per week per reseller. Thereafter, demand remains stable at 8 units per week per reseller. This is all that is happening. The game is typically run for about 30 simulated weeks.

### RESULTS

In this scenario, demand was initially stable, then demand increased in a very steady fashion, one added unit per week, to a level twice what it originally was and then demand stabilized again. This demand phenomenon is not unusually wild, in fact, it is much more well behaved than one might expect, especially when considering high-tech products.

The normal outcome is totally unexpected. Early in the game every reseller throughout the channel has its inventories fall to zero, and sales are lost due to inventory shortages. This is followed by substantial over-ordering and then excessive inventories all along the channel. At the end of the game, there is both excessive inventory and over-capacity at the manufacturing end, excessive inventory for the distributor and excessive inventory at every reseller's establishment. The only way to correct for the excesses is for the manufacturer to have a lengthy lay-off, take a capital loss and reduce capacity and then wait until the excessive inventories are worked down. This process could take as long as 6 to 8 months. In a real situation this would likely cause the manufacturer to go bankrupt. The distributor will suffer excessive inventories for as long as 6 to 7 months and the resellers may not get inventories into proper alignment for 4 to 6 months.

Debriefing is usually very lively. The discussion leads to an explanation of the problem, what happened, why it happened, the process that caused it and then leads the participants to consider methods of avoiding this serious and not uncommon problem.