

Fred Pasquale: Shipping Paper

Part One - *Read to the bottom of this page then stop.*

Fred Pasquale had numbers whirling around his head. He had a problem to solve, and needed to figure it out fast.

Fred Pasquale was the Transportation Manager for Port Townsend Paper Corporation. That meant he was responsible for getting supplies in and finished paper products out of the paper mill his company owned and operated in Port Townsend, Washington.

The Port Townsend Paper Corporation's mill had been built in 1918, and was designed to ship most of its products by railcar and barge to customers within the United States. During the last 15 years, however, things had changed. For one thing, the company's customer base had changed dramatically. Now, a full 60% of its products were shipped to Asia. With the change in customers, the railroad had been removed. Thus, in terms of shipping finished products out of the mill, Fred had two choices: (1) He could load his product barges and have it sent to Seattle to be put into cargo containers and then shipped to Asia. (2) Or, he could have cargo containers filled at the mill, trucked to Seattle, and then shipped.

But shipping wasn't Fred's problem right now. Storage was. Except that storage affected shipping. As the mill had been modernized, its production capabilities had increased dramatically, but its storage hadn't. The mill could produce either 500 metric tons (MT) of kraft paper (for paper bags) or 1,000 metric tons (MT) of kraft linerboard (for boxes) each day. Usually, for efficiency, the mill would produce paper for seven days and then linerboard for seven days.

But, the mill only had storage space for 1,000 MT. So, on weeks when the mill was producing linerboard, the mill ran out of storage quickly. And that meant that Fred had to figure out how to ship more linerboard out of the mill more quickly.

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Part Two - Read to the bottom of this page then stop.

Fred looked at the numbers again. He had to tell his boss which type of shipping he would recommend for the linerboard. He wanted to recommend the least expensive option to his boss. He thought about what he knew about each shipping option.

Trucking. When linerboard was trucked out of the mill, it had to be loaded into cargo containers. The cargo containers were then trucked to Seattle where they could be loaded directly on to container ships. Each container could hold 25 MT of linerboard. The mill had two people employed as paper loaders. Each of them was paid \$25/hour and each of them could load a cargo container in one and one-half hours. Then, it cost \$405 to hire a trucking company to take the cargo container to Seattle.

Barging. When linerboard was barged out of the mill, it was first loaded onto a flat barge. The barge was towed to Seattle where the linerboard would then be loaded into cargo containers, which were then loaded onto a container ship. The mill's two paper loaders, working together, could load a barge with 2,000 MT of linerboard in 12 hours. (A barge could not be shipped with less than 2,000 MT.) It then cost \$12/MT to tow the barge to Seattle and \$6/MT to load the linerboard into cargo containers.

Fred decided to figure out the cost of each shipping option for 1,000 MT. Then he could decide which was cheapest.

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Part Three - *Read to the bottom of this page then stop.*

Fred now had a good idea what each of his shipping options cost. It was clear that trucking was less expensive than barging. But, he had the nagging feeling he hadn't necessarily solved his storage problem.

If each of his paper loaders could fill a cargo container with 25 MT of linerboard in one and one-half hours, how many tons could they load if both of them worked at top speed for a full twelve-hour day? Could they load enough linerboard each day to solve Fred's storage problem?

Fred realized that to solve his storage problem, he had to find a shipping option that would allow him to ship 858 MT of linerboard a day. Fred had calculated the 858 MT-a-day figure by realizing that if the mill produced 1,000 MT of linerboard each day for seven days, he had approximately 142 MT of storage capacity each day. That is, if he stored 142 MT of linerboard each day and shipped 858 MT of linerboard each day, his storage shed would be completely full by the end of the week. The storage shed could then be emptied during the following week when the mill was producing 500 MT of paper each day.

Was trucking more or less expensive than barging if he needed to ship at least 858 MT of linerboard a day?

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Part Four - *Read to the bottom of this page then stop.*

Well, Fred realized, it was kind of a toss-up. But barging was slightly cheaper than trucking when all things were considered. He decided he would recommend to his boss that the mill use barges to ship the linerboard to Seattle.

Fred decided to write a one-page paper to his boss outlining the problem and how he proposed to solve it.

His paper would have three paragraphs:

The Problem. Fred would define the mill's storage problem and show his boss the number of metric tons of linerboard he needed to ship each day.

Trucking. Fred would quickly summarize the costs involved in trucking that much linerboard.

Barging. Fred would then summarize the costs involved in barging the linerboard. For both shipping options, he would quickly describe to his boss the steps that were involved in shipping the product that way.