

The Groundhog's New Clothes*

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1 Introduction

Steve and Eileen Franklin founded Beauti-Phil Apparel fifteen years ago in Punxsutawney, Pennsylvania, a small, industrial town in northwest Pennsylvania famous for its annual Groundhog Day festival celebration held on February 2 in honor of the furry prognosticator, Punxsutawney Phil. Beauti-Phil manufactures, silkscreens, and embroiders t-shirts and golf shirts primarily as souvenirs for the Groundhog Day Festival and other area events throughout the year.

In light of recent competitive developments, the Franklins have placed new emphasis on managing their production planning and inventory performance. They would like to begin by producing an aggregate production plan for the next six months based on their demand forecasts and expected costs. They expect to use the aggregate production plan as a tool to help them make their production planning decisions.

2 Background

Apparel manufacturers in the United States have recently faced stiff competition from goods produced in Southeast Asia. Even with the overseas transportation cost, Asian-produced garments are still often less expensive than their American counterparts because of inexpensive raw materials and labor. This is especially true in the low cost apparel categories, which include Beauti-Phil's products.

Beauti-Phil has been able to maintain its market presence in the face of low cost foreign competition primarily because of its reputation in the community. It is not an exaggeration to claim that most of the residents of the greater Punxsutawney area own at least one shirt manufactured by Beauti-Phil, because Steve and Eileen see their products wherever they go in the county (and often beyond). The Franklins have been a visible face for their company's commitment to the community by raising their family in the area, by supporting local events and organizations, by Eileen's six-year term as a member of the city council, and by hiring a large percentage of their workforce from Punxsutawney itself. Beauti-Phil's customers have been willing to pay more for their products than they would for foreign competitors presumably because they feel like they are supporting their friends by purchasing from the Franklins. Beauti-Phil has also been able to thrive due to its high quality products and short lead times for orders, which give the firm additional competitive advantages over its foreign counterparts.

Beauti-Phil's production process is like that of a mass-customized job shop in the spirit of Benetton's postponement strategy. In advance of orders, they produce neutral (colorless) t-shirts and golf shirts in sizes proportional to the size breakdown of an average order¹. Once an order is received, the shirts are dyed the appropriate color, and the logo and text are silkscreened or

¹ Andel, Tom. 2003. Custom-made supply chains. *Supply Chain Technology News*. December / January. http://www.newview.com/newsevents/articles/2003/2003_01.pdf

embroidered as desired. This postponement strategy allows Beauti-Phil to deliver its orders within short lead times without requiring a massive amount of work-in-process inventory for each garment color.

Beauti-Phil uses a quantity discount pricing policy for its products as shown in Table 1. In order to encourage its customers to order larger quantities of goods, they offer a lower per unit price for larger orders.

Table 1: Beauti-Phil Apparel Pricing Policy

	T-Shirts	Golf Shirts
Less than 24	\$14.00 each	\$22.00 each
24—50	\$13.50 each	\$21.00 each
50—100	\$12.50 each	\$20.00 each
100—1,000	\$11.00 each	\$18.00 each
More than 1,000	\$10.00 each	\$16.00 each

The Franklins openly acknowledge the importance of their workforce in Beauti-Phil's success in the past. They have actively sought suggestions and innovative ideas from the production workers about ways to improve the production process and their overall job satisfaction. Many of these suggestions have been implemented to everyone's mutual benefit. Steve and Eileen consider many of the workers to be part of their extended family. They have shared many lunches and dinners with their employees, getting to know them through honest, authentic conversations about everything from kids to local politics to the internet. Many employees have enhanced their friendship by inviting the Franklins to countless baptisms, weddings, and graduations over the years. Steve and Eileen value these relationships with their employees greatly, citing them as one of the main reasons that they love coming to work each day and as essential to Beauti-Phil's success in the future.

As in all goods markets with low barriers to entry, competitors have been moving into the northwest Pennsylvania region where Beauti-Phil operates over the past five years. Steve recently received a call from Curtis Howser, the president of the Inner Circle, the group that organizes and operates the Groundhog Day Festival. Curtis told him that another company had made a pitch to become the official clothier of the festival. Steve analyzed the proposal but regretfully declined to match the offer because his cost structure could not compete with the other bid.

Beauti-Phil still has a loyal customer base, but the loss of the Groundhog Day Festival account will undoubtedly dampen the company's revenue stream. In anticipation of this kind of new competition for souvenirs, the Franklins have been expanding their sales efforts to companies' logo merchandise and festivals and events in other areas such as Erie, Du Bois, and Oil City, Pennsylvania, and Conneaut and Ashtabula, Ohio. These efforts have been met with mixed success thus far; while they will lessen the loss of the Groundhog Day account, the Franklins are skeptical that they will be able to match the prior level of revenue in the future.

3 The Factory

The Beauti-Phil factory in Punxsutawney is a 20,000 square-foot facility with quality but somewhat antiquated machinery. The factory is leased from a major industrial landowner at a monthly rate of \$0.75 per square foot. This equipment is mostly the original capital that the Franklins used to start the company fifteen years ago. The Franklins own most of the equipment used in the factory, but they still have two \$10,000 payments due in February and August 2005 on the note they signed to pay for the newest piece of equipment purchased four years ago. Since the machinery is dated, it requires skilled laborers to operate. The Franklins have recently embraced lean manufacturing practices; consequently, they have cross-trained their employees so that each person can basically run any machine in the factory.

Computerized pattern creators and ultrasonic sewing machines have been introduced into the industry in recent years, but these machines are expensive and well out of reach for a small manufacturer. The Franklins have utilized subcontractors that own these computer-aided machines in the past when their backlog has been full. The quality of these subcontracted products is virtually indistinguishable from the apparel that Beauti-Phil produces in its own factory. The subcontractor charges Beauti-Phil \$8.00 per t-shirt and \$14.00 per golf shirt, and its service time is compatible with most of Beauti-Phil's promised delivery dates.

Before the loss of the Groundhog Day Festival account, Beauti-Phil's factory was running at about 80% capacity, so until the Franklins are able to expand their customer base in other local markets, they expect that the current level of capital in the factory will be able to handle the level of demand. Table 2 provides the six-month forecast of demand for t-shirts and golf shirts along with the expected number of production days in each month.

Table 2: Demand Forecast and Number of Production Days by Month

	October 2004	November 2004	December 2004	January 2005	February 2005	March 2005
T-Shirts	45,700	56,500	43,300	34,200	29,800	55,700
Golf Shirts	48,200	53,100	41,900	35,800	26,300	59,000
Prod. Days	21	20	21	20	19	23

In addition to the labor costs incurred with production, Beauti-Phil currently incurs a raw material cost of \$2.00 per t-shirt and \$3.50 per golf shirt. They also estimate an allocated overhead cost of \$1.50 per t-shirt and \$2.50 for each golf shirt, of which 20% is fixed overhead and 80% is variable overhead.

Eileen recently received a proposal from a potential new raw material supplier named Threads of Dignity located in Morgantown, WV, that would decrease the raw material cost to \$1.50 per t-shirt and \$3.25 per golf shirt. While researching the supplier to determine its reputation and financial viability, Eileen found an article in a trade magazine describing a complaint from environmentalists that Threads of Dignity was releasing an exorbitant amount of pollution into a river bordering its factory.

On September 30, 2004, Beauti-Phil has an ending inventory of 1,500 t-shirts and 2,000 golf shirts. Inventory costs for each month are estimated to be \$0.25 per t-shirt and \$0.45 per golf shirt applied to the inventory amount left at the end of the month. The Franklins expect to have 2,500 t-shirts and 2,500 golf shirts on hand at the end of March 2005.

4 Personnel

Beauti-Phil currently (at the end of September 2004) employs 80 production workers in the factory who are (basically) evenly split between two eight-hour production shifts. The first shift runs between 7:00am and 3:30pm (with a half-hour unpaid lunch break), and the second goes from 3:00pm to 11:30pm. The half-hour overlap allows the one shift to hand off to the other and gives the managers a chance to have weekly meetings with the entire staff at one time.

Eileen Franklin estimates that each production worker produces an average of eight shirts (both t-shirts and golf shirts) per hour, but historical data suggests that 2% of the goods produced do not meet Beauti-Phil's established level of quality and must be scrapped at a total loss. Production workers at Beauti-Phil earn an average hourly wage of \$9.50 and receive time and a half (1.5 times the regular hourly wage) for overtime hours. Overtime is limited to two hours per day for each worker (making a maximum 50-hour work week) to ensure that the employees are able to spend enough time with their families.

The Franklins have been adamant in the past that they would not fire a good worker, but the loss of the Groundhog Day Festival account and its accompanying drop in demand have forced them to consider layoffs as a possible option to ensure the financial viability of the company. Their workers have made many sacrifices for the Franklins over the years, so they feel that they must offer fired workers a severance package consisting of six weeks' pay. They also estimate an additional cost of \$120 for each fired worker, accounting for the paperwork and the anticipated decline in worker morale associated with reducing the size of the workforce. If demand eventually picks up and new (or old) workers must be hired, the Franklins estimate that the cost of training a new worker will be \$1,200, the cost of advertising the position will be \$50, and the paperwork and other additional hiring costs will be \$50.