Inkwell Bakery & Café

Abbey Stemler looked out over the bustling cafe and wondered about the next shipment of roasted coffee beans. Abbey had been part of the ownership team of Inkwell Bakery & Café for five years now and was ready to take on a new challenge as they expanded their business to a second location. For years, Inkwell had ordered roasted coffee beans from another local coffee shop to meet their demand. Although the quality of the beans was excellent, the wholesale price had been creeping up over the years and she was now being charged $11/pound. Although the supplier assured her that the price increase was temporary and would return to $9/pound once their production issues were resolved, she found it frustrating to be dependent on the supplier and their ever-changing prices. She made money on other items in her store but was losing money on her coffee. The new location had space available to install a coffee roasting machine.

Days turned into weeks, which turned into months, before Abbey realized she had made little progress on her project. Running a small business has many challenges and there are never enough hours in a day. She decided to reach out to the K507 spreadsheet modelling experts at the Kelley School of Business (that's you) for assistance.

Graciously, the students agreed to help and Abbey, ever grateful, agreed to provide them with information about the business and the research she had already done. Abbey knew that this investment would take a while to turn a profit. She told the team she wanted to see a profit after three years to be willing take on this investment. She also told the team that she had narrowed down the roasting machines to four different final candidates (they needed to look sleek and modern for the tours and coffee tastings at the store that they had started to envision!) Each roaster had a different retail price, resale value, and output capacity. Abbey spoke with a few of her coffee peers and learned that the advertised outputs are always too good to be true. They helped her estimate what each roaster would likely produce in a small business environment. She provided a table, Exhibit One, outlining this information.

Of course, the success of this operation would depend on whether they were, in fact, able to produce high-quality coffee and whether she could find a market for their output. Abbey told the team she had four primary categories of potential customers. Most prominently, she used coffee beans to make coffee drinks for her own customers, but she also sold bags of whole beans to retail customers and had secured a verbal commitment to supply beans in bulk for the Uptown, a local restaurant, and hoped to generate additional wholesale business for other customers as well. Each customer category had its own uncertainties about demand, sales price/pound and production cost/pound that needed to be considered, organized in Exhibit Two. In-house coffee demand was not a concern, but Abbey made clear that sales were not guaranteed for Uptown or the other wholesale customers. There was an 80% chance of winning a contract with Uptown and only a 50% chance that the other wholesale business would take off, given the numerous established local competitors.

Abbey was realistic and knew this project would be challenging. She estimated that there was a 10% chance of abandoning the project after 3 months if quality standards for the output could not be met, and that each roaster would lose 25% of its value after 3 months if she were forced to resell it as a lightly used machine.

There were a few other costs that Abbey made the team aware of. She planned to pay her employees $20/hour (net cost to Inkwell inclusive of taxes) when they were working on the roasting operation. Fuel and packaging costs each came out to $0.25/pound. Finally, Abbey needed to finance the up-front purchase and installation of the machine and was able to secure a loan with an 8% interest rate that would cover any of the options considered.

Now, she would like your expertise to decide if it would be a good decision for The Inkwell to get into the business of roasting their own coffee and, if so, which model they should purchase. She worries about the high uncertainty inherent in all the details of the business plan and would like an Excel model that she can use to easily select a roaster to see what distribution of outcomes she might expect to see and to easily change any numbers if the variables or assumptions change.

Exhibit One:

Coffee Roaster	Upfront Cost of Machine	Resale Value After 10 Years	Installation Costs (non-recoverable)	Output in lbs./hour (conservative estimate)	Output in lbs./hour (advertised)
Diedrich IR-5	$28,442	30%	$0	22.6	40
Mill City 3kg	$19,000	30%	$0	22	26.5
SF-10	$42,245	40%	$6,000	33.6	40
SF-6	$21,200	40%	$0	15	18

Exhibit Two:

Sales Channel	Weekly Demand (low estimate)	Weekly Demand (high estimate)	Price/lb. (sold)	Cost/lb.
Beans Used In-store	150	250	$ 9.00	$ 5.50
Retail Bags of Whole Beans	10	50	$ 15.00	$ 9.00
Uptown	100	120	$ 7.00	$ 3.75
Other Wholesale	100	250	$ 9.00	$ 3.75

Net costs after the 18% loss of weight during the roasting process