Telling Business Stories with the Grammar of Stocks and Flows

We use models to tell stories about cause and effect. Screenwriters condense the essence of their stories into loglines: When an incident occurs, a protagonist must achieve an objective in the face of some constraint or suffer a meaningful consequence.

For example, the logline for the 2012 movie, Argo, might be written as, "A CIA agent concocts a covert operation to produce a fake movie to rescue American diplomats during the 1979 Iranian hostage crisis."

Most of the time, our business stories are somewhat less dramatic than a Hollywood movie. However, they can still be summarized in a similar fashion. You, your company, or your customer are often cast as the protagonist. Your objective might be expressed as a desired state or rate. For example, your goal might be to increase your cash balance, reduce your debt, or increase your market share. The obstacle between you and your objective is very often a constrained resource—time or money, for instance.

We can use the grammar of stocks and flows to represent the key elements of our business stories. Stocks are the nouns of business, and flows are the verbs. Let's tell a simple story using this grammar.

Collecting accounts receivable increases my cash balance, and paying bills decreases my cash. "Cash" is the key noun in this sentence. "Collecting and "paying" are the key verbs.

Here's how the sentence is expressed symbolically with stocks and flows. The act of collecting causes an inflow to cash. The act of spending causes an outflow from cash.

Now let's try a story that's a little more involved. Let's consider the case of an online retailer. She must generate at least $100,000 of online sales to a new category of customers within a year to break even. Furthermore, she can only spend $1,000 per month on paid search. Here's one way we might tell her story using the symbolic language of stocks and flows.

The objective is to accumulate $100,000 of revenue over the course of the next 12 months. This says the Selling inflow, measured in dollars per month, increases the Cumulative Revenue stock, measured in dollars. The x-axis represents a timeline measured in months.

Selling is the product of the number of Customers times the Average Sales Rate. In our hero's experience, her average customer purchases $200 worth of products per month.

We know the level of Customers over time is a function of the inflow relative to the outflow. Let's say our hero's experience suggests that she'll lose about 30% of her customers per year. In other words, a typical customer will continue to buy for a bit over three years. Let's call the inflow "Converting." Prospective customers are converted into Customers as a function of the Click Rate, measured in Clicks per month, times the Conversion rate, measured in Customers per click.

Note that I didn't specify the source of new customers. Let's assume that the addressable market is large enough that the number of prospective customers is unlikely to be a constraint during the 12-month horizon of the model. Because we don't think the number of prospective customers will be a factor, it's okay to leave it out of the model and the story.

Since we're pursuing a new market segment, we don't know how well the search ads are going to convert. A little research indicates that a 2.5% conversion rate is average.

The maximum Click Rate is a function of the Adwords Budget divided by the Cost per Click bid for search ads. A little research indicates this is an average Cost per Click.

Now that we've filled in a few details, our story goes like this: The protagonist uses her advertising budget to buy clicks. If the conversion rate is average, there will be an inflow of almost 8 customers per month. She expects a typical customer to remain active for a little over three years. While they are active, she expects they'll buy $200 worth of products per month.

Now that we've set the stage, let's play the movie to see what happens to Cumulative Revenue. I'll add a chart to make Cumulative Revenue over time easier to see. Next, I'll scroll the timeline to month 12. By the end of month 12, Cumulative Revenue is very close to our hero's $100,000 target.

By writing our screenplay in the grammar of stocks and flows, we can, in effect, preview the movie. In this case, the heroine appears to have a decent chance of overcoming the constraints of her advertising budget to achieve her revenue goal.