

- » Exploring the who, what, and why of financial modeling
- » Investigating different types of models

Chapter **1**

Introducing Financial Modeling

The demand for financial modeling skills has increased exponentially in recent years and many job listings for finance positions now include “financial modeling” as a core skill. If you’re reading this book, you’ve probably already discovered how important this skill is, and you know that learning financial modeling will increase your employability in finance or financially focused fields.

In this chapter, I define financial modeling — what it is, who uses it, and why it matters. I also show you some examples of financial models. If you’re brand-new to financial modeling, this chapter is a very good place to start.

Defining Financial Modeling

Before you dive into how to use Microsoft Excel to create financial models, you need to know what financial modeling is, who uses financial models, and why financial modeling matters. In this section, I fill you in.

What it is

When I teach a course on basic financial modeling, I always ask my students for their definitions of the term *financial model*. Most of them come up with long-winded descriptions using terms like *forecast* and *cash flow* and *hypothetical outcomes*. But I don't think the definition needs to be that complicated. A *financial model* is a tool (typically built in Excel) that displays possible solutions to a real-world financial problem. And *financial modeling* is the task of creating a financial model.

You may have thought that a financial model was basically just an Excel spreadsheet, but as you probably already know, not every spreadsheet is a financial model. People can and do use Excel for all kinds of purposes. So, what makes a financial model distinct from a garden-variety spreadsheet? In contrast to a basic spreadsheet, a financial model

- » **Is more structured.** A financial model contains a set of variable assumptions — inputs, outputs, calculations, and scenarios. It often includes a set of standard financial forecasts — such as a profit-and-loss statement, a balance sheet, and a cash flow statement — which are based on those assumptions.
- » **Is dynamic.** A financial model contains inputs that, when changed, impact the calculations and, therefore, the results. A financial model always has built-in flexibility to display different outcomes or final calculations based on changing a few key inputs.
- » **Uses relationships between several variables.** When the user changes any of the input assumptions, a chain reaction often occurs. For example, changing the growth rate will change the sales volume; when the sales volume changes, the revenue, sales commissions, and other variable expenses will change.
- » **Shows forecasts.** Financial models are almost always looking into the future. Financial modelers often want to know what their financial projections will look like down the road. For example, if you continue growing at the same rate, what will your cash flow be in five years?
- » **Contains scenarios (hypothetical outcomes).** Because a model is looking forward instead of backward, a well-built financial model can be easily used to perform scenario and sensitivity analysis. What would happen if interest rates went up? How much can we discount before we start making a loss?

More broadly, a financial model is a structure (usually in Excel) that contains inputs and outputs, and is flexible and dynamic.

Who uses it

Many types of people build and use financial models for different purposes and goals. Financial models are usually built to solve real-world problems, and there are as many different financial models as there are real-world problems to solve. Generally, anyone who uses Excel for the purpose of finance will at some point in their career build a financial model for themselves or others to use; at the very least, they'll use a model someone else created.

WHAT IT TAKES TO BE A FINANCIAL MODELER

Someone working with financial models typically has an undergraduate degree in business, finance, or commerce. Additionally, they likely have at least one of the following postgraduate qualifications:

- An accountancy qualification, such as CA (Certified Accountant), CPA (Certified Public Accountant), CIMA (Chartered Institute of Management Accountants), ACCA (Association of Chartered Certified Accountants), CMA (Certified Management Accountant), or CIA (Certified Internal Auditor)
- A Master of Business Administration (MBA) degree
- A Chartered Financial Analyst (CFA) designation
- A Financial Risk Manager (FRM) designation

Of course, you don't need all those letters after your name to build and work with financial models. I know many skilled modelers who come from backgrounds in IT or engineering, or who don't have any formal qualifications at all. The Financial Modeling Institute (FMI) has set up a formal qualification; three levels of financial modelling qualifications are available. If financial modeling is important for your career, gaining this qualification will be very useful, but it is by no means a requirement. You can also find many training courses in financial modeling.

If you simply want to list financial modeling as a skill on your résumé, a short course is sufficient (backed up by at least a couple of models you've built in the real world). If you're aiming toward a financial modeling career, you'll need formal finance qualifications such as those listed here, as well as intense, practical, hands-on work experience.

Bankers, particularly investment bankers, are heavy users of financial models. Due to the very nature of financial institutions, modeling is part of the culture of the company — the business's core is built on financial models. Banks and financial institutions must comply with current regulatory restrictions, and the tools and controls in place are forever changing and adapting. Because of the risk associated with lending and other financial activities, these institutions have very complex financial modeling systems in place to ensure that the risk is managed effectively. Anyone working in the banking industry should have at least a working knowledge of spreadsheets and financial models.

Outside the banking industry, accountants are big users of financial models. Bankers are often evaluating other companies for credit risk and other measures. An accountant's models, however, are often more inward looking, focusing on internal operations reporting and analysis, project evaluation, pricing, and profitability.

Why it matters

A financial model is designed to depict a real-life situation in numbers in order to help people make better financial decisions.

Wherever there are financial problems or situations in the real world that need solving, analyzing, or translating into a numerical format, financial models help. Sometimes it's just an idea or a concept that needs to be converted into a business case or feasibility proposal. A skilled financial modeler can put substance to the idea by augmenting the details enough to get a working model upon which decisions can be made, investor funds can be gained, or staff can be hired.

For example, financial models can help investors decide which project to put their money into, an executive track which marketing campaigns have the highest return on investment, or a factory production manager decide whether to purchase a new piece of machinery.

Looking at Examples of Financial Models

When you then consider the benefits that a financial model can bring, it's difficult not to get carried away thinking of the application potential of a financial model! When you understand the principles of financial models, you can begin to look at the most common scenarios in which a model would be implemented.

There are a variety of categories of financial models:

- » **Project finance models:** When a large infrastructure project is being assessed for viability, the project finance model helps determine the capital and structure of the project.
- » **Pricing models:** These models are built for the purpose of determining the price that can or should be charged for a product.
- » **Integrated financial statement models (also known as a three-way financial model):** The purpose of this kind of model is to forecast the financial position of the company as a whole.
- » **Valuation models:** Valuation models value assets or businesses for the purpose of joint ventures, refinancing, contract bids, acquisitions, or other kinds of transactions or “deals.” (The people who build these kinds of models are often known as *deals modelers*.)
- » **Reporting models:** These models summarize the history of revenue, expenses, or financial statements.

You’ll see some overlap between each type of model category. For example, many reporting models also contain integrated financial statements, or a project finance model may be used for valuation purposes, but most models can be classified predominantly as one model type. Modelers often specialize in one or two of these model categories.

In this section, I show you some examples of scenarios and places in which these categories of financial models can come in handy, along with the functions and characteristics of each.

Project finance models

Loans and the associated debt repayments are an important part of project finance models, because these projects are normally long term, and lenders need to know whether the project is able to produce enough cash to service the debt. Metrics such as debt service cover ratio (DSCR) are included in the model and can be used as a measure of risk of the project, which may affect the interest rate offered by the lender. At the beginning of the project, the DSCR and other metrics are agreed upon between the lender and borrower such that the ratio must not go below a certain number.

Pricing models

The input to a pricing model is the price, and the output is the profitability. To create a pricing model, an income statement (or profit-and-loss statement) of the business or product should be created first, based on the current price or a price that has been input as a placeholder. At a very high level:

$$\text{Units} \times \text{Price} = \text{Revenue}$$

$$\text{Revenue} - \text{Expenses} = \text{Profit}$$

Of course, this kind of model can be very complex and involve many different tabs and calculations, or it can be quite simple, on a single page. When this structure model is in place, the modeler can perform sensitivity analysis on the price entered using a goal seek (see Chapter 6) or a data table (see Chapter 8).

Integrated financial statement models

Not every financial model needs to contain all three types of financial statements, but many of them do, and those that do are known as integrated financial statement models. You may also hear them referred to as “three-way financial models.” The three types of financial statements included in an integrated financial statement model are the following:

- » Income statement, also known as a profit-and-loss (P&L) statement
- » Cash flow statement
- » Balance sheet

From a financial modeling perspective, it’s very important that when an integrated financial statement model is built, the financial statements are linked together properly so that if one statement changes, the others change as well. For an example of how to build an integrated financial statement model, turn to Chapter 10.

Valuation models

Building valuation models requires a specialized knowledge of *valuation theory* (using the different techniques of valuing an asset), as well as modeling skills. If you’re a casual financial modeler, you probably won’t be required to create from scratch a fully functioning valuation model. But you should at least have an idea of what types of valuation financial models are out there.

Here are three common types of valuation financial models you may encounter:

- » **Mergers and acquisitions (M&A):** These models are built to simulate the effect of two companies merging or one company taking over the other. M&A models are normally undertaken in a tightly controlled environment. Due to its confidential nature, an M&A model has fewer players than other kinds of models. The project moves quickly because time frames are tight. The few modelers working on an M&A model do so in a concentrated period of time, often working long hours to achieve a complex and detailed model.
- » **Leveraged buyout (LBO):** These models are built to facilitate the purchase of a company or asset with large amounts of debt to finance the deal, called a *leveraged buyout*. The entity acquiring the “target” company or asset usually finances the deal with some equity, using the target’s assets as security — in the same way that many home loan mortgages work. LBOs are a popular method of acquisition because they allow the entity to make large purchases without committing a lot of cash. Modeling is an important part of the LBO deal because of its complexity and the high stakes involved.
- » **Discounted cash flow (DCF):** These models calculate the cash expected to be received from the business or asset a company is considering purchasing, and then discounts that cash flow back into today’s dollars to see whether the opportunity is worth pursuing. Valuing the future cash flows expected from an acquisition is the most common modeling method of valuation. Intrinsic to the DCF methodology is the concept of the time value of money — in other words, that cash received today is worth a lot more than the same amount of cash received in future years. For an example of how to calculate DCF, turn to Chapter 11.

Reporting models

Because they look historically at what occurred in the past, some people argue that reporting models are not really financial models at all, but I disagree. The principles, layout, and design that are used to create a reporting model are identical to other financial models. Just because they contain historical rather than projected numbers doesn’t mean they should be categorized any differently.

In fact, reporting models are often used to create actual versus budget reports, which often include forecasts and rolling forecasts, which in turn are driven by assumptions and other drivers. Reporting models often start out as a simple income statement report, but end up being transformed into fully integrated financial statement models, pricing models, project finance models, or valuation models.

PUTTING “FINANCIAL MODELING” ON YOUR RÉSUMÉ

When you know exactly what’s involved in the modeling process and you have knowledge of financial modeling skills that you’ve used in the workplace, you’re ready to put “financial modeling” on your résumé.

Since the economic crisis of 2008 and the uncertainty created by the COVID-19 pandemic, emphasis on financial modeling has increased. In response, there has been a rise in job descriptions specifying financial modeling as a core competency. If you’re applying for a job in finance, employers will no doubt look favorably upon this skill, as long as it rings true with the rest of your résumé. You need to be able to flesh out the tasks in previous positions you’ve held with examples of what kinds of models you built.

Although short vocational courses in financial modeling (see “What it takes to be a financial modeler,” earlier in this chapter) are well respected, what prospective employers really want to see is the *application* of financial modeling techniques in your everyday work.

Just reading this book or taking a financial modeling training course doesn’t mean you can add “financial modeling” to your résumé. You need to have actually *used* your modeling skills in the real-world environment. Take every opportunity to use models in your work. If you’re not currently employed, find example models online, take them apart, and see how you can improve them.

Whatever you do, don’t exaggerate when it comes to the level of experience you have with financial modeling. You may be asked in the interview to back up and discuss in great detail the intricacies of how you created a particular model.