Strategy Analytics

Measures of Industry Demand and Structure		
Item	*Equation*	*Common Uses*
Compound Annual Growth Rate (CAGR)	CAGR = (Ending Value/Beginning Value) ^ (1/#years)—1	Useful for summarizing the effect of fluctuating growth rates over several years for items such as revenues
Elasticity of Demand	ED = (% Change in Sales)/(% Change in Price)	Useful for assessing the effect of price changes on demand when setting prices and predicting sales
Cross-Price Elasticity	CPE = (% Change in Sales if Good A)/(% Change in Price of Good B)	Useful for assessing the degree to which consumers are willing to substitute one product for another
Concentration Ratio—4 Firm (CR4)	CR4 = $\sum$ Market Share of the four largest firms in an industry	A simple metric to evaluate the extent to which an industry is dominated by a few key firms
Herfindahl-Hirschman Index	HHI = $\sum$ (Market Share)^2	The sum of the squared market shares of all firms in an industry. This is a more comprehensive metric to evaluate the extent of concentration in an industry. In a monopoly, the HHI will be 1 $(100\%)^2$ and in a highly fragmented (and presumably highly competitive) industry, the HHI will approach zero.

Measures of Financial Performance		
Item	*Equation*	*Common Uses*
Return on Assets (ROA)	ROA = Net Income/Total Firm Assets	A measure of firm performance that makes for clearer comparison of performance among firms that have different amounts of leverage (different ratios of debt to equity)
Return on Equity (ROE)	ROE = Net Income/Shareholder's Equity	A measure of firm performance that looks only at what shareholders are receiving in return for keeping money tied up in the firm
Return on Sales (ROS)	ROS = Net Income/Sales Revenue	A measure of firm performance that makes for clearer comparison of performance among firms that operate in different ways (e.g., among firms where some own the assets they use and others contract for these assets)
Price–Earnings Ratio	PE = Price per Share of Stock/Earnings per Share of Stock	Useful for comparing stock prices among largely similar firms
Free Cash Flow	FCF = net income after taxes less investments in equipment and working capital plus depreciation and any other noncash charges (e.g., amortization of goodwill)	The cash a firm brings in during a year that is not needed to support the firm itself

Discounted Cash Flow (DCF)	DCF = $\sum$ (Free Cash Flow)/$(1 - \delta)^t$	Net present value (NPV) of future net cash flows. Useful for assessing the assumptions required for economic viability of specific strategic actions. (δ is the discount rate to be applied to the project, *t* is the amount of time until each cash amount is received.)
Market-to-Book Ratio	MB = (Stock Price × Total Shares Outstanding)/Accounting Value of the Firm's Assets Net of Debt	Used as a way to judge if the stock market believes the firm will create more value by operating than it could by selling off its assets
Tobin's Q	Q = (Stock Price × Total Shares Outstanding + Outstanding Debt)/ Replacement Value of Firm's Assets	Used as an alternative way to judge if the stock market believes the firm will create more value by operating than it could by selling off its assets (attempting to correct for accounting)

Tools for Inference and Decision Making Under Uncertainty		
Item	*Equation*	*Common Uses*
Break-Even Analysis	B = Fixed Costs/(Price – Variable Costs)	Identify the volume needed to make a project viable at a given price or (less often) the price needed to make a project viable at a given volume.
Decision Trees	See Excel—TreePlan	Identify the best choice today given a sequence of uncertain outcomes and costly or irreversible alternative choices, or identify the value of information that reduces the uncertainty or delays the choices.
Sensitivity Analysis (Tornado Charts and Monte Carlo Analysis)	See Excel—Crystal Ball	Evaluate the range of likely outcomes given that multiple (largely independent) uncertainties can cancel each other out or amplify the effect of one another and identify key uncertainties to be concerned about or areas where changes can have large beneficial effects.
Optimization	See Excel—Solver	Determine how to allocate resources given a varied set of resources and a large number of ways to use those resources.
Regression Analysis	See Excel	Determine how various factors are related from a jumble of historical data. (How great are the scale economies?)