

Efficient Capital Budgeting for R&D

In an increasingly competitive global economy, innovation is the imperative for small- and medium-sized businesses. The recent economic downturn not only highlighted the need for continuous innovation; it also emphasized the need to innovate wisely.

The statistics are telling. According to Research Infosource Inc., corporate R&D spending as a whole has declined over the past four years. However, the number of companies that appear to be engaged in research has doubled from 10,000 to 20,000 over the past 10 years. Industrial research by an increasing proportion of small and medium-sized businesses is expanding into more sectors of the Canadian economy.

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With cautious optimism in the economy many business owners that were forced to trim or cut research and development (R&D) spending in the past few years are investing again, but doing so a little more methodically. Efficient capital budgeting and strong partners to share and/or mitigate financial risk are the key to maximizing equity value from R&D investments.

Let's consider the hypothetical case of Opco Mfg. Ltd. ("Opco"), a manufacturing company with a large and diverse customer base operating in an increasingly competitive

market. Jack Smith, the CEO of Opco, has seen competitive pressures squeezing his gross margins and placing increased demands on marketing in recent years. With the support of a knowledgeable and talented workforce, Jack has considered increasing investment in R&D for improvements to product lines that will not only help retain valued customers but will also drive profit growth in an emerging market niche. Jack initially estimates that the new product line will cost \$4.25 million over three years and anticipates that it will add eventually add \$3.0 million to annual profits.

Capital budgeting for R&D must appropriately reflect the inherent technical and commercial risks, above and beyond standard financial risks. The total project payback must be discounted for the probability of technical and commercial success. In our example, Opco's engineers conservatively estimate a 60% probability of success in Year 1, 75% in Year 2, and 90% in Year 3. The cumulative estimated probability of success is 40%, which means the estimated probability of failure is 60%.

As an offset to the risk of R&D, the federal government offers two well-known programs to support small and medium-sized enterprise, the Industrial Research Assistance Program ("IRAP") and the Scientific Research & Experimental Development program ("SR&ED"). The IRAP program provides financial support for salary and contractor costs associated with R&D projects, in some cases up to 40%. The SR&ED program allows companies to claim a 35% investment tax credit up to the first \$3 million of qualified expenditures and 20% on any excess amount.

By leveraging both programs, Opco may be able to offset \$2 million in R&D expenditures up front, reducing the total outlay from \$4.2 million to \$2.2 million. After factoring for the probability of success and government funding programs, the net present value for the proposed project at a 25% cost of capital (or discount rate) is approximately \$1.0 million (see analysis above).




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	Year 1	Year 2	Year 3	Total
Gross R&D Outlay (Salaries + Equip.)	-\$2,500,000	-\$1,000,000	-\$500,000	-\$4,000,000
IRAP Funding	\$500,000	\$200,000	\$0	\$700,000
SR&ED ITC	\$0	\$875,000	\$350,000	\$1,225,000
R&D Outlay (Net of Gov't Funding)	-\$2,000,000	\$75,000	-\$150,000	-\$2,075,000
R&D Outlay (PV 25%)	-\$2,000,000	\$60,000	-\$96,000	-\$2,036,000
	Year 1	Year 2	Year 3	Total
Probability of Success	60%	75%	90%	40.0%
Probability of Failure (1-P(Success))				60.0%
	Year 4	Year 5	Residual (25%)	Total
Incremental Profit	\$1,000,000	\$3,000,000	\$12,000,000	\$16,000,000
Incremental Profit (PV 25%)	\$512,000	\$1,228,800	\$3,932,160	\$5,672,960
	NPV	Probability	NPV (Adjusted)	
Initial outlay NPV	-\$2,036,000	60.00%	-\$1,221,600	
Payback NPV	\$5,672,960	40.00%	\$2,269,184	
Project Net Present Value			\$1,047,584	

Partnerships with a venture capital fund can also provide flexible, patient financing designed to balance the specific risk profile of an R&D project and be accretive to a business owner's equity value.

In our example, let us presume that Opco has current EBITDA of \$1.0 million with a conservative debt balance at \$1.0 million (or 1.0x EBITDA). Mr. Smith doesn't want to sacrifice a healthy working capital position, particularly given the inherent technical risks of the proposed project, but doesn't want to defer the project any longer. There are a number of financing options providing various risk/return balances from pure equity to subordinated debt type instruments.

Pure equity-based financing has its merits, depending on the valuation and the personal preferences of the business owner. If Mr. Smith is able to negotiate equity financing at a multiple of 5x trailing EBITDA (\$4.0 million equity value after debt), Opco's notional cost of capital is 20%. The 5% differential on the \$2,000,000 of initial capital required represents value of approximately \$500,000 in addition to the NPV of \$1,047,584. Also, if the project is not successful and Opco sees an unexpected and prolonged pullback in its existing free cash flow, it has a patient financial partner that is there to support the company over the long-term. In the event of a prolonged pullback in profits, Opco owners would not bear the full brunt of a \$2,000,000 reduction in value as the new equity investors share in the downside risk.

A preferred share or subordinate debt facility is a more suitable instrument if Mr. Smith is more confident in the future prospects of the company. These types of instruments

can be structured as interest or dividend only with predefined repayment terms that are back-loaded. Business owners can use conversion options to reward investors if the venture is successful while maintaining a low base cost of capital. For example, Mr. Smith may negotiate a \$2.0 million convertible debenture, paying an 8% coupon and a right to convert at a slight premium to the current valuation (i.e., 6x trailing EBITDA or a \$5.0 million equity value after long-term debt). If the project is successful, the venture investor would convert and would share in the upside. In the event of a pullback or flat future performance, investors are unlikely to convert and Opco at least reaps the benefit of an 8% cost of capital with no principal repayment required for a predefined term. The key difference to pure equity is that Opco is at risk to the full \$2.0 million balance of the higher ranking preferred shares or subordinated debt, unlike straight equity.

Business owners have a wide range of options when it comes to financing R&D investments. The key to optimizing shareholder value begins with efficient capital budgeting. In the end, the primary goal of R&D investing is to build globally competitive, innovative businesses with truly sustainable profit growth—the rewards can be exponential.

