

CASE CHAPTER 12

Should Diagnostic Chemicals Proceed with the Development of the DNA-Based Genetic Testing Instrument?

Francis Erkhart, a local scientist, has recently invented a very promising and relatively simple DNA-based genetic testing instrument that allows doctors to detect various types of life-threatening diseases. He has approached Diagnostic Chemicals (DC) with his invention in the hope that they will further develop, test, and then commercialize the genetic-testing instrument. Erkhart wishes to negotiate a contract with DC so his invention can be brought to market as quickly as possible.

The Director of Finance at DC, Janet Morrison, is concerned about the risk of the project for the company. She, together with the R&D Director, estimate that it will take five years to develop and test the instrument before it is ready for commercialization. Significant expenditures will be required during these five years; some will be capitalized, some expensed.

To begin with, the company will immediately have to invest \$4,000,000 in new development and testing equipment that has a CCA rate of 40 percent and qualifies for a 10 percent ITC.

Second, the company will have to develop and test the instrument over the next 5 years. These expenditures, provided below, qualify for a 15 percent research and development investment tax credit, while the remaining 85 percent is a tax-deductible expense.

Year	Cost
1	\$1,000,000
2	1,000,000
3	1,500,000
4	1,500,000
5	1,500,000

Third, for the right to develop and test the genetic testing instrument, DC must pay Francis Erkhart \$250,000 when the contract is signed. Erkhart will also receive a yearly royalty of 12 percent of all sales associated with the instrument if it is commercialized.

The risk associated with the project concerns the possibility of commercialization and sales if commercialized. Based on various scenarios regarding commercialization, the possible yearly sales for these scenarios, and the probabilities of the scenarios occurring, Janet Morrison and the R&D Director have estimated that sales will average \$5.6 million per year, once the testing instrument is commercialized. If commercialized, the instrument is expected to have a sales life of 25 years.

While the risks associated with the project are great, so too are the rewards. The direct costs of producing the genetic testing instrument, if commercialized, are forecast to be only 18 percent of sales. (This is in addition to the 12% of the sales Erkhart receives.) Factory overhead and marketing costs for the instrument are expected to be \$800,000 per year.

Furthermore, the provincial government is very interested in ensuring the project proceeds and is a financial success. The province is willing to provide DC with a non-taxable cash grant of \$300,000: \$150,000 when the contract with Erkhart is signed and \$150,000 in 2 years' time. As well, the province is willing

to provide an interest rate buydown of 6 percent on a loan of up to \$500,000 for a term of 15 years. Diagnostic Chemicals could borrow \$500,000 for 15 years at a rate of 9 percent.

Diagnostic Chemicals's overall cost of capital is 14.5 percent, but since this project is in another highly risky line of business Janet Morrison feels the company should use a risk-adjusted discount rate of 18.5 percent to evaluate the possible investments. The company's tax rate is 23 percent.

Required

- a. Should Diagnostic Chemicals proceed with the development of the DNA-based genetic testing instrument? Explain.