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A Venture Capital decision tool using Bayesian network

Nondescript
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Table of Contents

Introduction

Start-up companies often do not have access to sufficient capital, but, if they could obtain that capital, they may have the potential for good long-term growth. If a company is perceived as having such potential, investors can hope to obtain above-average returns by investing in such companies. Money provided by investors to start-up firms is called venture capital (VC). Wealthy investors, investment banks, and other financial institutions typically provide venture capital funding.

Venture capital investment can be very risky. A study[1] indicates that 75% of backed ventures fail. Therefore, careful analysis of a new firm's prospects is essential before deciding whether to back the firm.

This system provides a simple network modelling the decision of whether to invest in a start-up firm. To use the tool, you simply need to feed the information you know about the start-up and it suggests you whether you should invest for the best returns.

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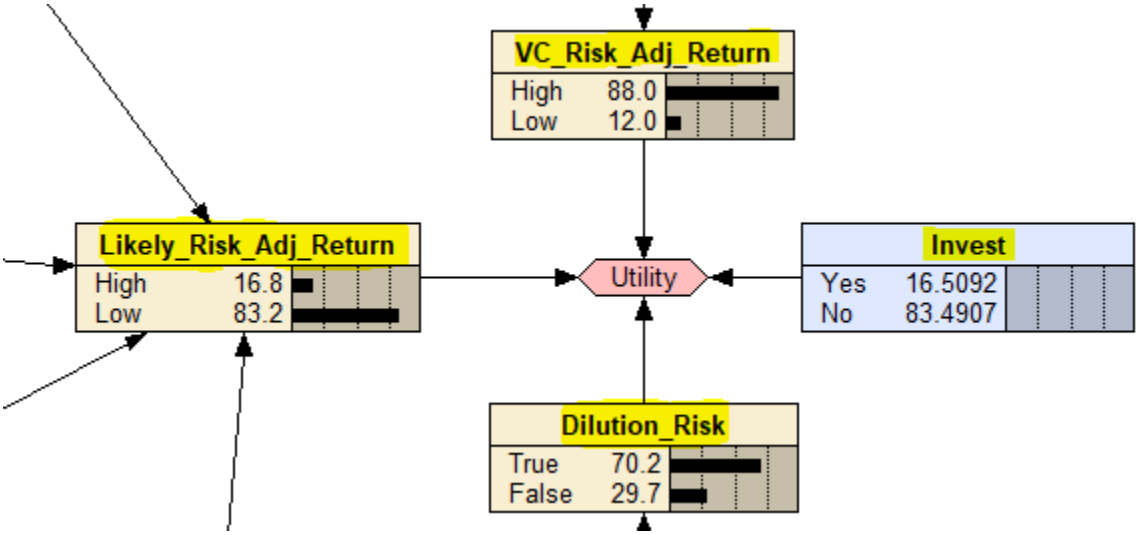
[1]: https://www.wsj.com/articles/SB10000872396390443720204578004980476429190

The Venture Capital Secret: 3 Out of 4 Start-Ups Fail

By Deborah Gage; Updated Sept. 20, 2012 12:01 a.m. ET

Background Theory and Knowledge Base

We see that only three variables directly affect the utility of the investment:

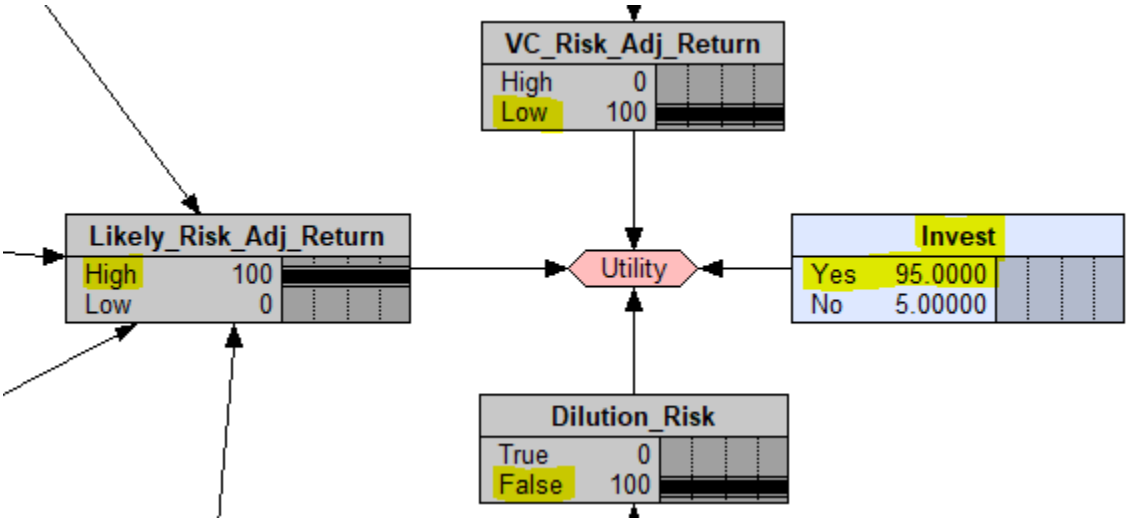


These variables are:

1. Likely_Risk_Adj_Return
    - concerns the likely return of the investment
2. Dilution_Risk
    - concerns the risk inherent in the firm's ability to repay the loan
3. VC_Risk_Adj_Return
    - concerns the risk-adjusted expectation concerning how soon the firm will repay the loan

Which, depend on several factors addressed in the network. ('Poten' in network means Potential, 'Adj' means Adjusted)

The utility can be thought of as a measure of the potential of the firm, with 0% being lowest and 100% being the highest. An investment with a value of 100% can be thought of as the perfect investment. If Likely_RiskAdj_Return is **high**, VC_Risk_Adj_Return is **low**, and Dilution_Risk is **false**, then the firm has the **most possible potential** the model can provide:



User Manual

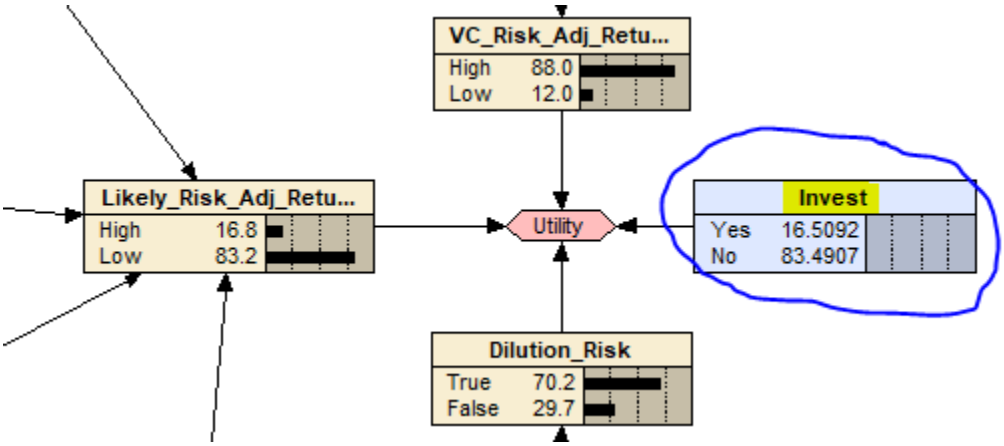
Instructions:

1. Copy the file VCDecider.dne in any location and open the file in Netica

2. Compile the network

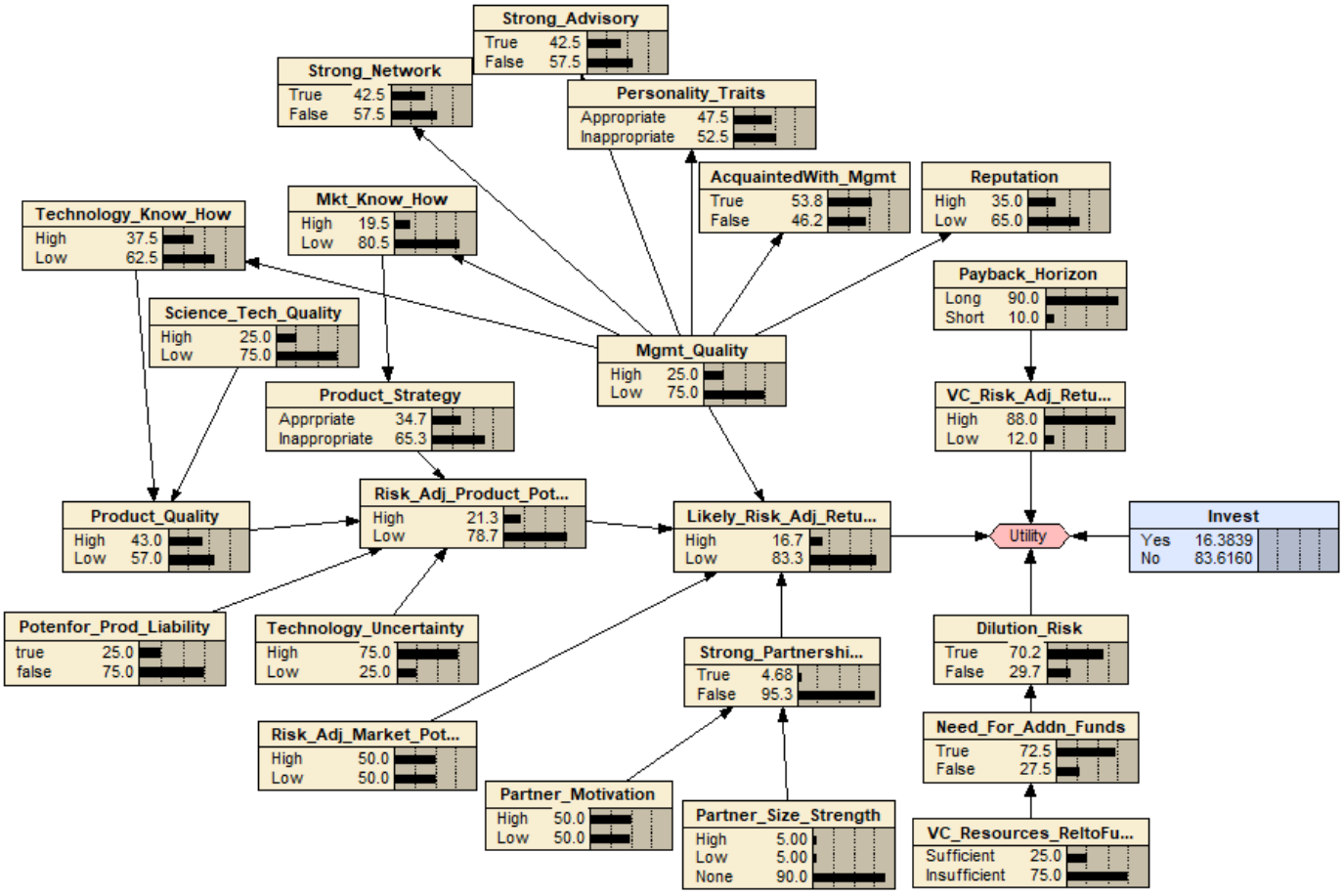
3. Input values by clicking on all the root nodes to see the changes flowing through the Bayesian Network

4. Suggested decision to invest in the particular company is reflected in the decision node as shown below:



Results

Here is the sample output:



User enters the known information about the Start-up Company (s)he wants decision on. System weighs the several probabilities and gives its probabilistic decision whether the user should invest in the particular company.