Expert systems essay

The Expert Systems case focuses around a business that develops computer programs for firms in the banking industry. John Grady, CFO for ESI, needs help in creating a detailed forecast for the executive meeting and to present it to the group. Using the information given in John's memos, his questions must be answered to help show the top managers how certain assumptions affect various outcomes. One of John's memos includes the percentage-of-sales formula to calculate the additional funds needed (AFN) to support the projected increased level of sales.

John explains that AFN is calculated by subtracting spontaneous liability increase and increase in retained earnings from the required asset increase. This formula is shown below: AFN = (A*/S)DS – (L*/S)DS – MS1(1-d) We calculate the AFN as $2. 76 million. Please see the attached spreadsheet for full calculations. Once we complete Table 3, provided by John, we can also calculate the AFN with the financial statements by taking the difference between the total assets and the total liabilities and equity. AFN calculated in this form equals 2. 89.

Please see attached spreadsheet for completed financial statements and cumulative AFN. Since the vice-president feels that the fixed assets were actually being operated at only 80% of capacity the projected external capital requirements must be recalculated. We must first calculate what full capacity sales would be by taking the actual sales from 1995 and dividing them by the percentage of capacity, in this case 80%. This suggests that if the fixed assets had been used to full capacity, 1996 sales could have been as high as $70. 2 million.

We then use this amount to estimate the target fixed asset to sales ratio by taking the 1995 fixed asset amount and dividing it by the full capacity sales; this results in 26%. Finally, we calculate the required level of fixed assets by multiplying the above ratio with the projected 1996 sales; resulting in a required fixed asset level of $17. 52 million. Since this amount is lower than the 1995 fixed asset amount it concludes that no new assets are needed. The excess funds can be used to increase dividends, use for growth opportunities, or pay down debt.

Our suggestion would be to use it for growth opportunities because they are already increasing their dividends by $0. 10 and they want to continue using their specific capital structure. Also, the case mentions that they had " other products in the pipeline" so the excess funds could be used for those products. If the assumption was made that ESI was operating at 90% capacity in 1995, then we would re-work the previous mentioned calculations, fully shown on the attached spreadsheet, and conclude that fixed assets would need to be increased in 1996 by $1. 3 million. This would change the AFN to $0. 54 million.

In many industries, technological considerations dictate that if a firm is to be competitive, it must add fixed assets in large, discrete units; known as lumpy assets. Lumpy assets have a major effect on the fixed assets/sales ratio at different sales levels and, consequently, on financial statements. When a firm is operating at full capacity even a small increase in sales would require a doubling of fixed assets, so a small projected sales increase would bring with it a very large financial requirement. Being certain about the percentage of capacity a business is working at is crucial to future success.

Higher dividend payout ratio reduces funds available internally, and increases additional funds needed. Higher profit margins increase funds available internally, and decrease additional funds needed. Higher capital intensity ratios increase asset requirements, and it also increases additional funds needed. The percent-of-sales method is a technique for forecasting financial data. When forecasting financial data for strategic planning, budgeting, or for developing pro forma financial statements, analysts can use the percent-of-sales method of forecasting to create reasonable projections for certain key data.

The idea is to see how a financial statement account item relates historically to sales figures, and then to use that relationship to project the value of those financial statement account items based on future sales estimates. Due to this method of forecasting requiring the items to be estimated based on relations to sales figures, it is necessary that movements in the items to be forecasted are highly correlated with fluctuations in the sales figures. If there is no clear correlation between the items to be forecasted and sales figures, then that item must be forecasted using a different technique.

Here is a very simple example; if, after examining and analyzing historical financial statement data, an analyst determines that inventory levels are typically at 30% of sales, and the sales forecast for the coming year is for $100, 000 dollars in sales, then, according to the percent-of-sales method of forecasting, the analyst can estimate inventory of approximately $30, 000, or 30% of the estimated sales figure. There are three steps in the percent-of-sales forecasting process. The first step is to analyze historical financial

statement data to determine which items are correlated with sales figures and which are not.

Only the items which are correlated with sales figures can accurately be predicted or forecast using the percent-of-sales method. Items that have no concrete relation to sales figures must be estimated using a different technique. The next step is to forecast sales for the fiscal period in question. Of course, because all projections in the percent-of-sales method of forecasting depend on relationships between financial statement items and sales figures, it is very important to get an accurate sales forecast.

The third step in the percent-of-sales method of forecasting is to forecast the values of certain appropriate financial statement items using the sales forecast from the previous step in combination with the historical relation between the financial statement item and the sales figure. Other types of methods that could be used besides the percentage of sales method are Sales Forecasts, The Additional Funds Needed Formula, and Forecasting Financial Requirements when the Balance Sheet ratios are subject to change.

Conducting sales forecasts gives valuable information for better planning and management for businesses of any size, and in any industry. The practice makes records available to evaluate levels of past and current sales, to evaluate growth of the business and to compare performance with others operating in the same industry. Forecasting allows a business to set and implement policies that lets a business control profits by monitoring prices and operating costs. In addition, using past data, a business may be able to

identify a minor problem and rectify it before the problem exacerbates, having a significant effect on sales.

For accurate forecasting, a business must know the dollar amount of sales volume over the last several years. These pieces of information are already organized into useful data in the company's accounting records and financial statements. The amount can be broken down into seasons, quarters, months or even weeks for accuracy. A thorough sales forecast must also consider all other factors that can influence sales, both internal and external.

Depending on industry and management practices, usinesses may prepare sales forecasts based on individual products or entire business units, may prepare and review forecasts more frequently and may forecast longer into the future. Additional funds needed (AFN) is a financial concept used when a business looks to expand its operations. Since a business that seeks to increase its sales level will require more assets to meet that goal, some provisions must be made to accommodate the change in assets. To phrase it another way, the business must have some plan to actually finance the new assets that will be needed to increase sales.

Economies of scale are used when forecasting balance sheet ratios due to their change. Economies of scale refer to the cost advantages that an enterprise obtains due to expansion. There are factors that cause a producer's average cost per unit to fall as the scale of output is increased. An economy of scale is a long run concept and refers to reductions in unit cost as the size of a facility and the usage levels of other inputs increase. Each method is different and would take a different amount of time to

process and produce. All the data that would be required would be taken from the company's balance sheet and income statement.

This does not state that the capital structure is out of balance; it merely states book value in comparison to market value is overstated. We believe that the percentage amount of debt should be 30 to 31% and that the percentage of equity should be 69 to 70% based on our findings. If you are basing interest expense on debt at the end of the year this will over estimate interest expense if debt is added throughout the year instead if all on January 1st. This cause circularity called financial feedback, more debt causes more interest, which reduces net income, which reduces retained earnings, and which causes more debt.

If you are basing interest expense on debt at the beginning of the year this will under estimate interest expense if debt is added throughout the year instead of all on December 31st. But this doesn't cause a problem of circularity. If you are basing interest expense on average of beginning and ending debt this will accurately estimate the interest payments if debt is added smoothly throughout the year but this will have a problem of circularity. Below is a chart of ratio values that could be useful to the executives on the retreat.