Bankruptcy Prediction Using Financial Ratios: A Machine Learning Analysis

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Data Description:

Boruta Variables	Definition	FR Category
Total Income Total Expense	Total Income/Total expense -> shows how much the total income exceeds the total expense in each firm. Higher the ratio, more the profit margin	Profitability
Quick Assets to Current Liability	Indicates a company's short-term liquidity position and shows a company's ability to meet its short-term obligations with its most liquid assets. Can pay current liabilities without selling inventory- higher ratio, better company's liquidity, financial health. Quick ratio considered more conservative than current ratio	Solvency
Revenue per Share Yuan	Computes the total revenue earned per share over a designated period. Calculated by dividing total revenue by average total shares outstanding (all the shares of a corporation that have been authorized, issued and purchased by investors and are held by them)	Others
Average Collection Days	The average collection period represents the average number of days between the date a credit sale is made and the date the purchaser pays for that sale. A company's average collection period is indicative of the effectiveness of its accounts receivable (credit sales- not yet collected from customers) management	Turnover Ratios

	practices. Good is about 30 days	
Current Ratio	Current assets/Current liabilities-> measures a company's ability to cover its short-term obligations with its current assets (working capital ratio)	Solvency
Operating Profit Rate	Percentage of profit a company produces from its operations, prior to subtracting taxes and interest charges. Helps analyze a company's operational efficiency.	Profitability
Contingent Liabilities Net Worth	Share of contingent liabilities in the net worth (total assets – total liabilities). A contingent liability is a liability or a potential loss that may occur in the future depending on the outcome of a specific event (eg- potential lawsuits). Conti liab can potentially reduce a company's assets and negatively impact a company's future net profitability and cash flow	Solvency
Net Value Growth Rate	Growth rate of net value	Growth
Fixed Assets to Assets	Shows the extent to which the companies assets are tied up in the form of fixed assets (long-term, tangible assets, that can be used for more than a year)	Capital Structure Ratios
Net Income to Stockholders Equity	The return on equity ratio or ROE is a profitability ratio that measures the ability of a firm to generate profits from its shareholders investments in the company. In other words, the return on equity ratio shows how much profit each dollar of common stockholders' equity generates.	Profitability
Total Asset Return Growth Rate Ratio	The return on total assets ratio indicates how well a company's investments generate value, making it an important measure of productivity for a business. It is calculated by dividing the company's earnings after taxes (EAT) by its total assets	Growth
Working Capital Turnover Rate	quantifies the proportion of net sales to working capital, and it measures how efficiently a business turns its working capital into increased sales numbers. The working capital turnover ratio reveals the connection between money used to	Turnover

	finance business operations and the revenues a business produces as a result.	
After tax net Interest Rate		Others
Equity to Long term Liability	The Long Term Debt to Equity is a measure of a company's financial leverage. It is calculated as Long Term Debt divided by Equity.	Solvency
Interest bearing debt interest rate		Solvency
Revenue per person	Revenue earned per employee (avg small business generates $100,000 in Rev per employee)	Others
Accounts Receivable Turnover	Accounts receivable (money due but not yet paid by customers) turnover ratio is calculated by dividing your net credit sales by your average accounts receivable. The ratio is used to measure how effective a company is at extending credits and collecting debts.	Turnover
Realized Sales Gross Profit Growth Rate	Growth in realized sales to gross profit ratio	Growth
Inventory and accounts receivable Net value	Net value of inventory and amount to be received from customers	Turnover
Quick Ratio	Acid-test ratio- measures ability of a company to pay all of its outstanding liabilities using its near/quick/highly liquid assets	Solvency
Net Income to Total Assets	ROA is net income divided by total assets (same as above)	Profitability
Continuous Net Profit Growth Rate	Continuing Operating Income after Tax Growth	Growth

LVQ Variables	Definition	FR category
Net worth Assets	Equity to total assets	Capital Structure Ratios
Debt ratio	Shows the extent of a company's leverage- what portion of a business's asset are financed through debt	Solvency
Persistent EPS in the Last Four Seasons	EPS to net income	Profitability
ROA.C. before interest and depreciation before interest	Return on assets- before interest and depreciation, before interest	Profitability
Net profit before tax Paid in capital	Net Profit before tax - paid in capital	Profitability
Per Share Net profit before tax Yuan	Net profit per outstanding share	Profitability
ROA.A before interest and after tax	Return on assets- before interest and after tax	Profitability
ROA.B before interest and depreciation after tax	Return on asset- before interest and depreciation, after tax	Profitability
Net Value Per Share B	Net (asset) value (NAV= assets – liabilities) per share- before interest and dep, after tax	Others
Net Value Per Share A	NAV- before interest and after tax	Others
Net Income to Total Assets	The return on total assets ratio indicates how well a company's investments generate value, making it an important measure of productivity for a business. It is calculated by dividing the company's earnings after taxes (EAT) by its total assets	Profitability
Net Value Per Share C	NAV- before interest and depreciation, before interest	Others
Working Capital to Total Assets	The working capital to total assets ratio compares the net liquid assets to the total assets of the firm. Working Capital is the difference between current assets and current liabilities, so the Working Capital to Total Assets ratio determines the short-term company's solvency.	Solvency
Retained Earnings to Total Assets	Retained earnings to total assets depict the financial leverage of the entities; it indicates how assets were financed from retention of profit instead of paying profit out as dividends and acquiring loans. Ideally should be 100% Retained earnings- Retained earnings refer to the portion of the earnings left	Profitability

	with the company after the distribution of dividend to its shareholders. Retention of earnings is from the profits of the business for a financial year. A company cannot pay dividends or retain earnings in the case of net loss in any financial year	
Current Liability to Assets	Same as debt ratio= Current liab/ total assets	Solvency
Operating Profit Per Share Yuan	Operating Earnings Per Share means Consolidated Net Earnings divided by the number of shares of Common Stock outstanding at the end of the Performance Period.	Others
Operating profit Paid in capital	Operating Income/Capital Paid-in capital is the full amount of cash or other assets that shareholders have given a company in exchange for stock, par value plus any amount paid in excess. Additional paid-in capital refers to only the amount in excess of a stock's par value.	Solvency
Current Liability to Current Assets	Current assets/Current liabilities-> measures a company's ability to cover its short-term obligations with its current assets (working capital ratio)	Solvency