

## PREDICTING BUSINESS FAILURE IN THE MALAYSIAN CO-OPERATIVE SECTOR

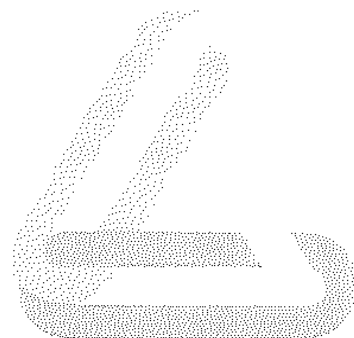
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### ABSTRACT

Many researchers have formulated corporate/business failure prediction models utilising financial ratios. Although there are a few prediction studies on Malaysian firms been documented, there is no evidence on prediction studies conducted on co-operative societies. Therefore, the main purpose of this study is to develop a failure prediction model that can discriminate between failed and non-failed co-operatives. The dataset consists of 30 matched-pair of failed and non-failed co-operatives over the period of 1999-2002. A step-wise logistic regression analysis was employed to develop the failure prediction model. The findings indicate that the model correctly and significantly classified 76.67 % and 86.67 % of the failed and non-failed co-operatives respectively three years prior to failure. Five statistically significant predictor variables found were the Cash Flow to Net Worth Ratio, Quick Assets Percent Ratio, Working Capital Percent Ratio, Cash to Current Liabilities Ratio and the Operating Income to Total Asset Ratio. These variables imply that net worth, cash flow, working capital and profits are the important determinants of failure for the co-operative.



CO-OPERATIVE COLLEGE OF MALAYSIA

## INTRODUCTION

### *Significance of Co-operatives*

A co-operative is an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise. The co-operative form of organising a business enterprise is an effective means to permit a larger resource mobilisation than that within the capacity of most individuals and small enterprise. Although co-operatives are not instruments of employment promotion, they do effectively create and maintain employment and provide income to both members and employees in the form of share of surplus, wages and salaries.

Different form of co-operatives tackle different kinds of needs and problems, but what they have in common is that they serve their members and the community, aiming to improve the quality of life of their members. A co-operative business and a private business are dissimilar in term of their purposes. The purpose of a co-operative business is generally to provide its members with goods and/or services, usually at competitive prices. On the other hand the purpose of private business is to maximise profits for its owners on the capital they have invested by offering goods and /or services for sale to the public.

Co-operatives are people-centred business enterprises, which operate in all areas of economic activity and in almost all countries of the world. The United Nations estimated in 1994 that the livelihoods of nearly 3 billion people, or half of the world's population, were made secure by co-operative enterprises. Whether in the form of large enterprises with thousands of members or small community enterprises with fewer than 100 members, co-operatives have shown their advantages not only in terms of their overall benefits to members, but also as contributors to national economies.

In many countries such as Britain, Canada, Federal Republic of Germany, Sweden, Japan, Philippines, India, the co-operative system are the most important and largest economic institutions next to the government and the private sector. Similarly, in Malaysia the government recognises the fact that co-operative can play an important role in the socio-economic development of the country. The promulgation of the National Co-operative Policy in 2003 to ensure the efficiency and effectiveness of the movement is a testament that the co-operative is recognised as an important sector of the national economy.

### *Corporate Failures*

Today's economy is driven by change, which is influenced by knowledge transfer. Whether

it is technological advancement, regulatory requirements or marketplace competition, companies and co-operatives alike must be able to adapt to new knowledge quickly and efficiently in order to survive and maintain their competitive edge. And one of the most significant threats for many businesses today irrespective of their size and nature of operations is insolvency. Business failure is an important problem to mitigate as they bring substantial losses to creditors, owners of corporations and society in terms of lost taxes, income and jobs. According to the Beddall Inquiry (1990) conducted in Australia, failure crisis is not only a serious waste of resources but also damages the quality of life for the different groups of people.

Extent evidence shows that in the past two decades, business failures have occurred at higher rates than at any time since the early 1930's. For instance, big and supposedly strong corporations such as Kmart in January 2003 made serious attempts to restructure and reorganise its operations, shutting down 326 stores and slashing up to 37,000 jobs in the hope to remain solvent. On the co-operative side, the attempted hostile takeover of the Co-operative Wholesale Society (CWS), the biggest consumer co-operative in Europe by a 'corporate raider' in 1997, was found to be the result of continuous falling market share of retailing and underperformance. In Singapore, the financial crisis in 1997 causes the credit co-operatives to be impacted by higher default rates on their loans, which adversely affect their financial position, some leading to liquidation (Co-op Dialogue: Int. Co-operative Information Centre, 1998)

In the home front, over the past decade, the co-operative sector has gone through various stages of growth, crisis and change. The debacle of the 24 Deposit-Taking Co-operatives in the 1980's, for example, has been classified as one of the numerous business failure inflicting co-operatives (despite being once regarded as strong and established entity), whose failure has tarnished the image and credibility of the co-operative sector. Similarly the co-operative sector, which has significantly created huge capital and asset accumulation and provided employment opportunities for over 13,834 people at various levels are not spared of the setback of the post-financial crisis period. The following years saw many co-operatives in Malaysia being badly affected, imposing heavy strain on the co-operative sector to remain solvent. The consequences of business failure and dissolution of co-operatives will not only affect those within the movement but would also undermine the government efforts to alleviate the standard of living of the economically disadvantaged sections within the urban and rural sectors.

An important issue that top management and stakeholders must recognise is the fact that very rarely do business failures occur suddenly. Generally, both adverse financial and managerial indicators may be observed at an early stage as an organisation moves towards insolvency. In fact, Weitzel and Johnson (1989) discuss business failures as being the last

stage of an organisation cycle. The issue of interest however, is not the incidence of failures of itself, but rather it is the ability to predict impending failures through some common identifiable variables or ratios, particularly through the use of prediction models.

### ***Corporate Failures in the Co-operative Sector***

With respect to co-operatives, formal liquidation or dissolution of a society is carried out in line with the Co-operative Act 1993. The Registrar-General may make an order for the revocation or dissolution of a co-operative society as follows:

- (i) After an inspection has been made under Section 64 or 68, or after an inquiry has been held under Section 66;
- (ii) Or on receipt of an application made by not less than one-tenth of the members or such number of delegates representing not less than one-tenth of the members of the society, or the Board of the registered society for the society to be dissolved
- (iii) If at any time it is proved that the number of members of the registered society has been reduced to less than ten
- (iv) If the society ceases to have any activities for 5 years or more or one that has never had any activity since inception.
- (v) If the society cease to function and fails to meet its objective so far as a last resort deems necessary for winding up

According to an analysis carried out by the Department of Co-operative Development (DCD), from the year 1998 to September 2002, a large portion of the dissolved society was made following an inquiry under Section 64 of the Co-operative Act 1993. (Table 1) However, the percentage of co-operatives liquidated and classified as dormant along the years involves a substantial percentage of the total population. For example, although the number of co-operatives being dissolved as at 31 December 2001 is seemingly small (1%), the number of dormant co-operatives, which stands the risk of being dissolved, was 249, almost 8 % of total registered co-operatives. Thus, examining general symptoms of failed co-operatives through the development of prediction model will provide important insights and guidance to managers and policy makers to identify potential upcoming failure and to formulate effective preemptive measures to mitigate the failures. These efforts could reduce the economic and human costs associated with business failure, avoid financial distress to all stakeholders and contribute towards a more resilient and productive co-operative sector.

**Table 1: Number of Deregistered Co-operatives.**

Year	Deregistered
1996	39
1997	48
1998	33
1999	30
2000	37
2001	34
As at Sept 2002	25

Source: Co-operative Development Department

### ***Problem Statement***

Documented findings on corporate failures in different industries and different countries cannot be generally applied to the co-operative environment due to the differences in the nature of establishment, objectives, values, structure, and provision of law. Adopting prediction models developed in a different context will lead to misinterpretations and inappropriate decision making. Since it is believed that the prediction model for the co-operative sector in Malaysia will have its own set of significant variables, the objective of this research is to generate a model of failure prediction suitable for the Malaysian co-operative movement. The generation of the model will also contribute new knowledge for the users of financial statement to maximise the usage of information contents in financial statements.

### ***Objective of Study***

The main objective of this study is to develop a model that identifies the significant financial ratios that best discriminate between failed and non-failed co-operatives. To achieve the objective, the study will investigate the following:

- (i) The distributional properties of the financial ratios of the failed and non-failed co-operatives.
- (ii) The significant ratio that might give an insight into the co-operatives state of health.

### *Limitation of Study*

This study will only concentrate on financial ratios modelling because of their popularity and predictive success in previous research. Another reason for this selection is based on a comparative study between models done by Mossman et al (1998) where the ratio model was shown to be most effective in explaining the likelihood of failure prior to the liquidation year. The other models such as market returns and market standard deviation were found to be instable in discriminating failed and non-failed firms.

## **LITERATURE REVIEW**

### *The Use of Ratios for Business Failures Prediction Model*

Prior to the development of quantitative measures of company performance, agencies such as Dun & Bradstreet, Inc. were established to supply qualitative type of information assessing the credit-worthiness of particular merchants. However, formal modern aggregate studies on ratio analysis were recorded to have been in practice since early 1900's. Wall (1919), who made a compilation of seven different ratios from a large sample of 981 firms, found great ratio variation between geographical areas and between types of business. Other analysis for example by Smith and Winakor (1935) and several later ones concluded that failing firms exhibit significantly different ratio measurements than continuing entities.

One of the earliest modern study in the area of ratio analysis and bankruptcy classification was performed by Beaver (1967). Using a sample of 79 failed firms and 79 non-failed firms, Beaver employed 30 ratios, which were divided into six groups : cash flow ratios, net income ratios, debt to total assets ratios, liquid asset to total asset ratios, liquid asset to current debt ratios and turnover ratios. Beaver's univariate analysis found that the ratio of cash-flow to total-debt is the strongest ratio to predict failure and that a number of indicators could discriminate between matched samples of failed and non-failed firms for as long as five years prior to failure. This pioneering work has set the stage for other different types of statistical techniques to be used to generate bankruptcy prediction models; discriminant analysis (Altman, 1968), logit or probit analysis (Ohlson, 1980), recursive partitioning (Frydman, Altman and Kao, 1985) and neural networks (Boritz et al, 1993). These prediction models are based on cross-sectional analysis which compares different firms on the basis of financial variables reported at a specific point in time.

Using matched sample technique of 53 bankrupt and non-bankrupt firms primarily from the period of 1969 to 1975, and divided almost equally into manufacturing and retailer groups, Altman et al (1977) develop a new failure prediction model different from the model

developed in 1968. The study adjusted the basic data of the sample to consider several important accounting modifications through the use of the multivariate discriminant analysis (MDA). Even though the studies utilising this methodology provided high classification accuracy, they were criticised because MDA models are based on certain assumptions that are frequently violated and has certain limitations. As such, similar methodologies have been attempted to improve upon the robust but restrictive discriminant structure. Ohlson (1980) applied an alternative statistical method, the Logit Analysis (Logistic Regression Analysis) in predicting corporate failure, a method that avoids some of the argued limitations of the MDA approach. Since then, logistic regression has been extensively used for the development of failure classification models.

### *Logistic Regression Analysis (LRA)*

Ohlson (1980), Zavgren (1985) and others have suggested the use of probabilistic model of bankruptcy, precisely the use of logit analysis to reduce the problems and avoid some of the argued limitations of the MDA approach. Generally, logistic regression extends the technique of multiple regression analysis to research situations in which the outcome variable is categorical. The focus is on situation in which the outcome variable is dichotomous, for example, success/failure or failed / healthy although it may be extended to outcomes with three or more categories, example, improved / same / worse.

The logit model utilises the coefficients of the independent variables to predict the probability of occurrence of a dichotomous dependent variable. Specifically, the technique weighs the independent variables and creates a score for each company in order to classify it as failed or healthy. The function considered in logistic regression is called the logistic function and can be written as follows:

$$P_{jt}(Y=1) = 1/(1+e^{-z}) = 1/\{1+\exp[-(b_0+b_1X_1+b_2X_2+\dots+b_nX_n)]\}$$

where:

$P_{jt}(Y=1)$  = Probability of failure (1 for failed companies and 0 otherwise) for entity j at the end of year t;

exp = exponential function;  $b_1, b_2, \dots, b_n$  = slope coefficients;

$X_1, X_2, \dots, X_n$  = predictor variables

## METHODOLOGY

### *Sample Selection*

The majority of corporate failure prediction studies define failure legalistically, since this kind of definition can be objectively dated and allows researchers to easily classify the populations being examined. This approach is also followed in the study, where the selection of sampled failed co-operatives was made as per the Co-operative Societies Act 1993 and that has been gazetted as dissolved from 1999 through September 2002. The final data set consists of 30 failed firms that met the following criteria:

- (i) the co-operative must have been classified 'dissolved' within the period of 1999-2002
- (ii) the sample co-operatives must have at least 3 years of a complete financial statement prior to them *initially* being classified as going through the process of liquidation. (Since the liquidation period may take to about 1-2 years, the date as when the co-operatives liquidation starts being processed and not the date of the Gazette is important in determining the cut-off period of operation.)

After the sample of failed firms was obtained, 30 control sample of non-failed firms were drawn from the database of the Monitoring Unit, Department of Co-operative Development. Consistent with the majority of prior failure prediction studies, the failed co-operatives were matched with healthy or non-failed co-operatives. The paired-matching was made based on the closest **share capital** of the co-operatives. The control sample were randomly selected from a population list with share capital of less than RM 10,000, RM 10,000-RM 40,000, RM 60,000-RM 80,000 and RM 100,000-RM 150,000 which is the approximate capital size of selected sample of the 'failed' co-operatives.

### *Data Collection*

The financial information needed for this study was retrieved manually from the financial and legal files of the respective co-operatives. Each complete financial statement had to include the Balance Sheet, the Appropriation Statement and the Income Statement. The dependent variable selected is defined as the dichotomous event named as a failed co-operative or a non-failed co-operative. The predictor (independent) variable is defined as the commonly used financial ratios selected from those used by Beaver (1966), Altman (1968), and Ou and Penmen (1989). A list of 30 financial ratios have initially been selected to be applied to the failure prediction models. **Appendix 1** presents the ratios that were examined in this study.



Ratios which are related to sales were excluded as majority of the samples selected are not involved in trading, and as such do not have sales figure per se in their financial statements. (Income for the co-operatives was basically derived from non-trading activities such as income from investment, contract jobs, services and rental.) However, to select the ratios that were significant to the prediction model, a bivariate logistic regression was performed for each of the thirty ratios. In addition, the backward elimination method were applied and different combinations of the ratios were tested. The selection of the final set of ratios was based on the statistical significance of the estimated parameters, the sign of each variable's coefficient and the model's classification result.

### ***Data Analysis***

The econometric methodology of stepwise logistic regression analysis are used to develop the failure prediction model. This technique was chosen to avoid some fairly well-known problems associated with the Multivariate Discriminant Analysis. The Logit analysis was achieved by using a statistical computer package SPSS Version 9.01. The binary format for the output of the models was 1 for co-operatives classified as 'Failed' and 0 for co-operatives classified as 'Non-Failed'

## **FINDINGS AND DISCUSSION**

### ***Descriptive Statistics***

A basic step for the data analysis is the identification of any significant differences between the two groups of sample, the failed and non-failed co-operatives. Initially, this was accomplished through the calculation of the significant descriptive statistics for all 30 financial ratios used in the study.

A total of nine ratios, having  $p$  value of less than 0.10 were identified to differ significantly in their means. The Cash Flow to Net Worth, the Current Liabilities %, The Long Term Liability Percent, the Total Liability Percent, the Cash Percent, the Quick Asset Percent, the Current Asset Percent, the Operating Income to Total Asset and the Return on Owners Equity ratio differ significantly in their means for the fail and non-fail group.

Table 2 shows the mean values of the nine ratios for the failed and non-failed co-operatives and their t-statistic, which indicates that there is a significant mean difference between the two groups on the dependent variable. Therefore the null hypothesis of no significant difference in the ratios between the two groups (fail and non-fail) can be rejected.

**Table 2 : Failed and Non-Failed Co-operatives – Data Means & T-test**

Variable Name	Failed Co-operatives	Non-Failed Co-operatives	t-statistic	One tail P value
	2.074	0.267		
Cash Flow to Net worth	0.632	0.256	1.367	0.091
Current Liabilities Percent	0.009	0.000	1.961	0.027
Long Term Liab. Percent	0.638	0.256	1.951	0.030
Total Liab. Percent	0.554	0.393	1.991	0.026
Cash Percent	0.747	0.543	1.847	0.034
Quick Assets Percent	0.792	0.641	2.319	0.011
Current Asset Percent	-0.737	0.073	1.317	0.097
Operating Inc. to T.Asset	- 0.478	0.047	-2.098	0.022
Return on Owners Equity			-1.555	0.065

It is also noted that the means for the Operating Income to Total Asset and the Return on Owners Equity has a negative value for the failed co-operative. This is due to the fact that 63 % of the failed firms (19 out of 30) recorded average net loss to the business, to the extent that they carry a negative retained earnings in their accounts. This has generally eroded the return on owners /shareholders equity . Comparatively only 10 % (3 out of 30) of the non-failed firms recorded an average net loss, which was consistent with the positive mean value for the non-failed co-operatives.

### *Correlation Coefficients.*

Variables constructed from accounting data are frequently highly collinear, which would pose a problem for the logit models. As such, a preliminary step was taken to calculate the correlation coefficients of the variables. The Pearson correlation analysis, which measures the strength, significance and direction of a linear association between two variables, is employed to test the relationship among the variables (at 0.05 % confidence level).

The objective is to identify the variables that are associated with one another so that one mate of those variables can be eliminated. This is to ensure that the variables are independent. After every elimination of a variable, a logistic regression is run on the data to check for the standard error and significance. However, in eliminating the variables, due attention is given to the importance of the ratios to the study.

V3 demonstrates a strong association with V6, while V7 is highly correlated to V 14. V12,

V13 and V 11 and also V 30, V 24 V2,V5 show strong correlation with each other. V 20 is seen to be closely associated with V 18, while V 19 to that of V 17.

### ***The Logit Regression Model.***

Using a stepwise algorithm, just like discriminant analysis, this procedure makes the optimal selection of the set of variables possible based on their significance. The selection of the significant predictor variables was made using the backward elimination method. These two techniques are particularly useful since they avoid the multicollinearity problems that could possibly arise with the inclusion of many variables. Furthermore, these techniques select the variables based on the Likelihood Ratio Test.

Finally, nearly all the possible combinations of the remaining variables were examined. Careful consideration were made so that the variables co-efficient is significant at 10 % level and for the model to provide high classification results. A total of 14 financial ratios were included in the final set. (Table 3)

**Table 3: List of Financial Ratios included in the final set.**

Code	Name of ratio
VAR 1	Cash Flow to Asset
VAR 2	Cash Flow to Net Worth Ratio
VAR 6	Net Income to Total Debt
VAR 12	Quick Assets Percent
VAR 14	Working Capital Percent
VAR 15	Percentage Change in Working Capital
VAR 16	Cash to Current Liabilities
VAR 20	Percentage Change in Current Ratio
VAR 22	Return on Opening Equity
VAR 24	Equity to Debt Ratio
VAR 25	Percentage Change in Debt to Equity
VAR 26	Percentage Change in Total Assets
VAR 27	Operating income to Total Assets
VAR 29	Return on Owners Equity

From these fourteen selected ratios, finally, the five most statistically significant predictor variables were entered into the logistic regression model.

1. Cash Flow to Net Worth Ratio. (V 2)
2. Quick Assets Percent Ratio. (V 12)
3. Working Capital Percent Ratio ( V 14)
4. Cash to Current Liabilities Ratio ( V 16)
5. Operating Income to Total Asset Ratio. ( V 27)

The estimated parameter values of the five logistic regression function are as follows

$$\begin{aligned} V2 &= 0.4443 \\ V12 &= 5.2717 \\ V14 &= -3.1428 \\ V16 &= 2.7423 \\ V27 &= -11.4204 \end{aligned}$$

This indicates that the Cash Flow to Net Worth, Quick Asset Percent and Cash to Current Liabilities ratios are positively associated with the probability of failure while that of Working Capital Percent and Operating Income to Total Asset ratio are negatively associated. From here we can see that in case of failure prediction, liquidity seems to play an important role. The overall correct classification of the logistic regression three years prior to dissolution is 81.67 %.

Group	Correct Classification
Non-Failed	86. 67 %
Failed	76. 67 %
Overall	81. 67%

The cut value is 0.50 which means that co-operatives reaching a figure above this number are classified by the model as failed. The goodness of fit of the model, which reflects how well the model, fits the population is given by 2 statistics, the Cox and Snell's R<sup>2</sup> and Nagelkerke's R<sup>2</sup>. The value of Cox and Snell is 0.403, while that of Nagelkerke's is 0.537. Since the latter is an improvement of Cox, this value is taken to interpret that the model explains 53.7 % of the variation in the data.

The Likelihood ratio test which gives a value of 52.266 means that the 14 variables included in the final model are significant in explaining some of the variability in the data.

## ***Constituent Variables***

The explanations to the constituent variables included in the model developed are as follows:

### ***1. (V 2) Cash Flow to Net Worth***

This ratio measures the co-operatives net cash flow to its investments. The efficiency of asset management and the profit margin play an important factor in determining this ratio. Since a big portion of the sample (failed co-operatives) have low investment in fixed asset, depreciation does not significantly affect the cash flow position. As such profit margin will be an important factor in determining the return on the co-operatives investment. The smaller is the ratio of the cash flow to its net worth, the higher will be the probability of failure to the co-operatives.

### ***2. (V12) Quick Assets Percent***

A co-operative that intends to remain a viable business must have enough quick assets (cash and accounts receivables) to be converted to cash, relative to its total asset holding. In other words they must maintain their liquidity. The smaller is the quick asset proportion to the total assets, the lower will be the probability of co-operative remaining solvent, i.e. higher failure probability. As such, co-operatives should pay particular attention to their cash management and the efficiency of collection policy. The inability to recover account receivables would not only affect the co-operative resources but will also bring extra cost to the co-operatives in the form of bad debts.

### ***3. (V14) Working Capital Percent***

Working capital percent is calculated by subtracting current liabilities from current assets and comparing it relative to the total assets. This ratio is basically used to help gauge a co-operative's ability in weathering difficult financial periods and is a good tool to evaluate the latter's health. Many views this ratio as a good proxy for management discipline. The smaller is the ratio, the higher will be the failure probability for the co-operatives.

### ***4. (V16) : Cash to Current Liabilities***

The ratio of cash to current liability measures the ability of the co-operative to settle its current obligation using its cash at hand. This also indicates whether the co-operatives can provide sufficient cash to conduct its business in the near future. The higher is the proportion of cash to its current liabilities, the higher will be the probability of the co-operatives to remain solvent.

### ***5. (V27): Operating Income to Total Assets***

This ratio measures the operating profit rate of return for a co-operative. The smaller is the ratio, the higher will be the failure probability for the co-operatives.

## CONCLUSION

The logistic regression model developed has achieved an overall correct classification of 81% – 67 % three years prior to dissolution. The average correct classification of DV= 0 (non-failed) is 86.67 % while that of DV = 1 (failed) is 76. 67 %. Hence, we can deduce that the model can potentially be used to predict failures in the co-operatives. Five predictors variables that were statistically significant to the logistic regression model are the Cash Flow to Net Worth Ratio, Quick Assets Percent Ratio, Working Capital Percent Ratio , Cash to Current Liabilities Ratio , and Operating Income to Total Asset Ratio. From the predictors variables included in the model, it can be seen that liquidity plays an important role in failure prediction.

Although the prediction model is seen as a useful tool to predict failure, particularly from the financial perspectives, it should be cautioned that since co-operatives are established in a different operating system and environment, other non-financial factors which are not explored in this study, must also be considered. Non-financial variables such as managerial deficiencies i.e lack of management skills and appropriate managerial training (Larson and Clute, 1979), unsupportive members, location of operation, inability to compete in the market and policies and regulations governing co-operatives in many instances can also lead to the failure of a co-operative. As such, it is pertinent for a co-operative to have a better understanding of an overall awareness of perceived co-operative failure causes so that the co-operative can identify the challenges contributing to failure and to take corrective measures in order to remain solvent.

**APPENDIX 1 : INITIAL SELECTED FINANCIAL RATIOS**

<i>CODE</i>	<i>RATIO</i>	<i>RATIO FORMULA</i>
V 01	Cash Flow To Assets	$(\text{Income} + \text{Depreciation}) / \text{Total Assets}$
V 02	Cash Flow To Net Worth	$(\text{Income} + \text{Depreciation}) / (\text{Total Assets} - \text{T. Liabilities})$
V 03	Cash Flow To Total Debt	$(\text{Income} + \text{Depreciation}) / (\text{Total Liabilities})$
V 04	Return on Assets	$\text{Net Income} / \text{Total Assets}$
V 05	Return on Equity	$\text{Net Income} / (\text{Total Assets} - \text{Total Liabilities})$
V 06	Net Income to Total Debt	$\text{Net Income} / \text{Total Liabilities}$
V 07	Current Liabilities Percent	$\text{Current Liabilities} / \text{Total Assets}$
V 08	Long Term Liab. Percent	$\text{Long Term Liabilities} / \text{Total Assets}$
V 09	% Change in Long T.Liab.	$(\text{L.T.Debt CY} - \text{L.T.Debt PY}) / \text{L.T.Debt PY}$
V 10	Total Liabilities Percent	$\text{Total Liabilities} / \text{Total Assets}$
V 11	Cash Percent	$\text{Cash} / \text{Total Assets}$
V 12	Quick Assets Percent	$(\text{Cash} + \text{Acc. Receivables}) / \text{Total Assets}$
V 13	Current Assets Percent	$\text{Current Assets} / \text{Total Assets}$
V 14	Working Capital Percent	$(\text{Curr. Assets} - \text{Curr. Liabilities}) / \text{Total Assets}$
V 15	% Change in Working Cap.	$(\text{WC \% CY} - \text{WC \% PY}) / \text{WC \% PY}$
V 16	Cash to Current Liabilities	$\text{Cash} / \text{Current Liabilities}$
V 17	Quick Ratio	$(\text{Cash} + \text{Acc. Receivables}) / \text{Current Liabilities}$
V 18	% Change in Quick Ratio	$(\text{Quick Ratio CY} - \text{Quick ratio PY}) / \text{Quick Ratio PY}$
V 19	Current Ratio	$\text{Current Assets} / \text{Current Liabilities}$
V 20	% Change in Current Ratio	$(\text{Current Ratio CY} - \text{Current Ratio PY}) / \text{Current Ratio PY}$
V 21	Income Growth	$(\text{Income CY} - \text{Income PY}) / \text{Income PY}$
V 22	Return on Opening Equity (ROOE)	$\text{Net Income} / \text{Begin. Owners Equity}$
V 23	% Change in ROOE	$(\text{ROOE CY} - \text{ROOE PY}) / \text{ROOE PY}$
V 24	Debt to Equity (DTE)	$\text{Total Liabilities} / (\text{Shlders Fund} + \text{Reserve fund})$
V 25	% Change in DTE	$(\text{DTE CY} - \text{DTE PY}) / \text{DTE PY}$
V 26	% Change in Total Assets	$(\text{Total Assets CY} - \text{Total Assets PY}) / \text{T. Assets PY}$
V 27	Operating Inc to T.Assets	$(\text{Net Profit} + \text{Tax} + \text{Interest}) / \text{Total Assets}$
V 29	Return on Owners Equity	$(\text{Net Profit} + \text{Tax} + \text{Interest}) / \text{Share Cap.} + \text{Retained Earn}$
V 30	Total Assets to Net Worth	$\text{Total Assets} / (\text{Total Assets} - \text{Total Liab})$

- CY – Current Year
- PY – Previous Year

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