CHAPTER THREE

RESEARCH METHODOLOGY

3.1   Introduction

This study is carried out based on takeover bids made over the period 1990-1995. For this study, a sample of 60 non-financial public listed companies was chosen which was then split into two main groups; i.e., low sales growth companies and high sales growth companies. This study however, excludes the companies that come under financial sector.

3.2   Research Hypotheses

3.2.1 Hypothesis I

Based on the previous literature, the hypotheses of this study are as follows:

As this study further explores the performance of the non-financial companies by dividing the selected companies into two, low sales growth (LSG) companies and high sales growth (HSG) companies, the level of performance is expected to be significantly different.

The use of the two groups of companies has been found in many studies but then it has been noted that Ansoff's study is closely related to this study. From the literature review, Ansoff discovered that after an acquisition, the rates of growth of the low sales growth companies and high sales growth companies were significantly different. The same pattern of inconsistency will be expected in this study.

Ho   There is no significant difference between the two groups in terms of performance with respect of different periods; i.e.,

Period 1: pre-crisis

Period 2: during crisis

Period 3: 1996-1998.

H_1 There is a significant difference between the two groups in terms of performance with respect of different periods;i.e.,

Period 1: pre-crisis

Period 2: during crisis

Period 3: 1996-1998.

3.2.2 Hypothesis II

Despite the argument that most companies' shareholders do not benefit from mergers and acquisitions, Ansoff again in his study revealed that there was a significant difference between the LSG companies and HSG companies in relation to the P/E ratio, EPS and dividends paid out. Indeed, HSG companies were found to have shown lower growth rates as a result of increased shareholders' wealth.

Ho: There is no significant difference between the two groups in terms of shareholder value appreciation during the post-acquisition period.

H_1:   There is a significant difference between the two groups in terms of shareholder value appreciation during the post-acquisition period.

3.2.3 Hypothesis III

Ho   The pattern of relationship between ROE and other profitability measures for LSG companies and HSG companies is the same.

H₁   The pattern of relationship between ROE and other profitability measures for LSG companies and HSG companies is *not* the same.

3.2.4 Hypothesis IV

Ho   The pattern of relationship between ROE and other profitability measures for both groups will not be different without P/E ratio.

H₁   The pattern of relationship between ROE and other profitability measures for both groups will be different without P/E ratio.

3.2.5 Hypothesis V

Ho   The pattern of relationship between ROE and other profitability measures for both groups will not be different without EPS.

H₁   The pattern of relationship between ROE and other profitability measures for both groups will be different without EPS.

3.3   Selection of Measures

Understanding the basis of measuring the performance of the selected companies is essentially important. The performance is measured based on the share prices of the companies over the period July 1996-December 1998 (30 months). More precisely, the study tends to capture the 'capital gains yield' registered by the companies of the two groups over the 30-month

period. This capital gains yield (CGY) is calculated on a monthly basis and the formula is as follows;

$$CGY_{mt} = \frac{\text{Share Prices}_{mt} - \text{Share Prices}_{m-t}}{\text{Share Prices}_{m-t}} \times 100$$

Where,

mt = current month
m-t = previous month
Therefore, the higher the share price of the current month, the greater the capital gains will be and this denotes greater performance and vice versa.

Thus, the calculation of capital gains yield is also related to the Gordon Constant Growth Model as illustrated below;

Expected rate of return	=	Expected dividend yield	+	Expected growth rate or **capital gains yield**
ks	=	$\dfrac{D_1}{P_0}$	+	g

Understandably, the higher the capital gains yield, the higher the expected rate of return (k_s) would be and thus the performance is also said to be greater. As for the purpose of this study, the mean scores derived from the companies' capital gains over the 30-month period would be used as the basis for measuring performance.

In addition, other forms of measures are also considered for assessing shareholders' wealth in a more specific manner. This is made on a comparative basis between the LSG companies and HSG companies by incorporating some useful accounting data (profitability measures) mainly ROE, Dividends paid out, EPS, gearing ratio, PE ratio and the formulae adopted are as follows;

$$ROE = \frac{\text{Post-tax earnings X 100}}{\text{Total Equity}}$$

ROE simply reveals the return (in percentage) that an investor receives for every one dollar invested. The higher the ROE, the better it would be.

$$\text{Dividends Payout} = \text{Payout Ratio}$$

When a company has a policy of paying out a certain percentage of its earnings to its shareholders, we call this as payout ratio. The payout ratio is the proportion of net income paid out as dividends. Thus, 1 minus payout ratio = retention ratio (RR). Thus, ROE x RR= Sustainable growth rate (SGR).

$$EPS = \frac{Profit\ before\ tax}{No\ of\ shares\ issued}$$

EPS indicates a return in dollar for every one unit share held by an investor. The higher the EPS, chances to pay higher dividends are greater.

$$PE\ Ratio = \frac{Market\ price}{EPS}$$

PE ratio indicates how much an investor is willing to pay per dollar of reported profits. Higher PE ratio signalling higher growth prospects and lower PE ratio signalling riskier firms.

$$Gearing\ Ratio = \frac{Long\ term\ debt}{Total\ equity + long\ term\ debts}$$

Firms with higher gearing ratio indicate greater use of debts and thus the riskier the firms will be.

$$\boxed{\textbf{Total Asset = Current Asset + Fixed Asset}}$$

The total asset comprises of current asset and fixed asset. It is believed that the higher the asset, the larger the company is.

3.4   Sampling Design

A non-probability sampling was adopted for this study, as selection process was quite arbitrary and as it heavily relied on personal judgement. For the purpose of the study, a sample of 60 non-financial public listed companies was selected.

As there was a need to split the selected companies into two main groups based on their average sales growth rates, some specific sampling method was also considered. Thus, quota sampling was incorporated into this study to ensure the desired characteristics of each group could be maintained. Thus, of the 60 companies selected, 30 companies come under low sales growth companies and the other 30 companies come under high sales growth companies.

3.5   Data Collection Procedure

The data gathered for the study were secondary data. The details of the collection procedure are explained as follows;

First, the process of identifying the companies that participated in M&A activities between years 1990 and 1995 was carefully carried out. To

determine this, the announcement dates were used as the basis. And another rule that was strictly complied with in selecting those companies was that *an acquisition should comprise of at least 51% of the target company's outstanding shares.* All this information was obtained from Investors' Digest.

Companies annual reports were then used to determine the selected companies' average sales growth rates on the basis of 3 years prior to their involvement in M&A activities. Unlike Ansoff's study, the two extreme groups were obtained by ranking those selected companies based on their sales growth rates and from which 30 low sales growth companies and 30 high sales growth companies were determined (refer to Appendix 1).

However, companies handbook were also used especially for obtaining accounting data such as ROE, DPO, EPS, PE, total asset and gearing ratio (on average) over the period 1995-1997. The Sequencer programme was also utilised especially in realising capital gains yield for all the selected companies over the 30 - month period as explained in the earlier part.

3.6   Data Analysis Techniques

To answer the hypotheses mentioned earlier, the use of appropriate statistical techniques is essentially important. The statistical techniques adopted are explained as follows.

3.6.1 T- test

This technique was used to test the hypotheses that the mean scores on some variables would be significantly different for two independent variables. The two independent variables were low sales growth companies and high sales growth companies. Their mean scores were compared with

respect to various periods, 1. Pre-crisis; 2. crisis and 3. 1996-1998. The use of independent variables was also extended to compare mean scores with respect to a number of profitability measures at significance level 0.05.

3.6.2 Paired Sample Testing

In addition to the independent samples testing as explained above, a 3-paired samples testing was also adopted to examine the performance of the three independent groups (low sales growth companies, high sales growth companies and both groups- all the non-financial companies) with respect to Pair 1, Pair 2 and Pair 3.

Pair 1:   pre-crisis period and crisis period

Pair 2:   pre-crisis period and 1996-1998 period

Pair 3:   crisis period and 1996-1998 period

For instance, if the performance of low sales growth companies is examined with respect to Pair1, meaning their performance (mean scores are) is assessed in comparison between pre-crisis and crisis periods at significance level 0.05.

3.6.3 Multiple Regression Analysis

Multiple regression analysis is an analysis of association that simultaneously investigates the effect of two or more independent variables on a single dependent variable. For this study, the dependent variable is ROE (Return on Equity) and the independent variables are DPO (Dividends Payout), GR (Gearing Ratio), TA (Total Asset), PER (Price-Earnings Ratio) and EPS (Earnings Per Share). However, two methods were adopted (under the multiple regression analysis) for this study. They were;

i. Enter Method

Under this method, all the independent variables were incorporated in the regression model, and then significantly correlated independent variables were identified at significance level 0.05. The model of the regression analysis could be depicted as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \ldots + \beta_n X_n$$

Where,

$Y \sim$ dependent variable

$\alpha \sim$ constant

$X \sim$ independent variable

$\beta \sim$ coefficient beta

Thus,

$$ROE = \alpha + \beta_{1DP0} + \beta_{2GR} + \beta_{3TA} + \beta_{4PER} + \beta_{5EPS}$$

ii. Stepwise Method

In principle, stepwise method works in the same with the Enter Method, but it chooses only the significantly correlated independent variables to be incorporated in the regression model. It should be noted that the presence of the two independent variables, EPS and PER, could produce a multicollinearity effect, thus deteriorate the applicability of

the regression model. Therefore, two additional stepwise regression analyses were carried out:

First, included EPS but excluded PER.

Second, included PER but excluded EPS.