# PRIOR PERFORMANCE AND CHOICE OF DIVERSIFICATION STRATEGY

**Wan Mohd Nazri Wan Daud**
Faculty of Management & Economics, Universiti Pendidikan Sultan Idris
Tanjung Malim, Perak, Malaysia,

***Abstract***

*Most literature has debated on the effect of diversification strategy and performance. However, the issue that could enhance performance is far from over either related or unrelated. Further investigation from different perspectives should be conducted to determine the relationship between diversification strategy and performance. Possibly, prior performance dictates the selection of diversification strategy as high performing firms focus on related business while low performing firms pursue unrelated business. In finding the evidence, panel data analysis was used on a sample of 76 Malaysian firms from various industries for the period of 1994 to 2007. Based on empirical research, this paper tests and confirms that prior performance influences selection of diversification strategy.*

***Keywords*** *Prior performance, diversification strategy, related diversification, unrelated diversification*

## INTRODUCTION

Most studies in diversification field have investigated the effect of diversification strategy on performance yet the evidence remained inconclusive (Lins and Servaes, 2002, Mishra and Akbar, 2007, Santalo and Becerra, 2008, Daud, Salamudin and Ahmad, 2009). Most researchers were commonly concerned whether firms should concentrate on current business or diversify away from the existing industry and its impact on performance. Even though some literature has argued diversification strategy is not a sole factor to determine performance of the firms (Geringer, Tallman and Olsen, 2000; Ramirez and Espitia, 2002), the direction of their research is towards related or unrelated effect on performance.

That stream has been debated extensively in literature which implied the importance of diversification strategy on performance. In contrast, this study attempts to examine prior performance effect on choice of diversification strategy in Malaysia in the context of resource based theory.

## Resource Based Theory

This theory explains the reason why firms choose a diversification strategy either a related or unrelated diversification strategy. Resources based theory prefers firms to implement related over unrelated strategy. Nevertheless, resources based can be divided into three categories; physical, intangible and financial resources. Physical and intangible resources lead firms to choose a related strategy while financial resources may lead firms to either execute related or unrelated strategy. Usually financial resources are more associated with unrelated strategy (Wernerfelt, 1984).

Choice of diversification strategy either related or unrelated always depends on the resources that are available to the firms. Firms would not instantaneously choose a diversification strategy without first looking into what resources they have. For example, firms could not implement related strategy without selling their non-core businesses to raise funds so that they can acquire more strategic assets that are related to current business. Likewise, firms would not proceed to acquire a new business beyond their current industries without adequate knowledge and funds. Acquisition or disposal of business largely depends on either firms implement related or unrelated strategy. Apart from discussing the theories, there is also a need to understand why firms implement related over unrelated strategy or vice versa. Certain firms still prefer to perform unrelated diversification even though it is mentioned as a value-destroying strategy. Similarly, most studies favor related strategy as it is assumed to perform very well (Rumelt, 1982; Lins and Servaes, 2002) but some related firms had been delisted due to poor financial condition.

## Prior Performance and Choice of Diversification Strategy

Most studies have examined the relationship between diversification and performance issues (Ishak and Napier, 2004, Santalo and Becerra, 2008). However, there are inconclusive findings associated with empirical evidence indicating the impact of diversification strategy and performance. Despite this, there are some studies investigating the effect of performance on choice of diversification strategy (Hall, 1995; Park, 2002). The reason being is that prior performance may influence the choice of diversification strategy. Preliminary evidence by Chang and Thomas (1989) suggested that low performance firms inclined to increase the degree of diversification strategy with expectation to improving their future performance.

Such a view is emphasized by Burgers, Padgett, Bourdeau and Sun (2009) who contended that diversification strategy did not influence performance. Instead, prior performance has an impact on the choice of diversification strategy due to two reasons. First, low expectation of earnings motivates firms to diversify in seeking a new growth of income. Thus, this causes firms to implement unrelated strategy. Second, past profitability

provides firms with ample income to finance their growth to increase performance. This situation encourages firms to pursue a related strategy. Nevertheless, they articulated that there is no specific strategy that can improve performance whereby firms should choose different strategies depending on their particular situations because firms have to consider the opportunities and challenges offered in any particular environment.

Several other studies have provided similar support to the above view by Burgers et al. (2009). Among them are Hall (1995) and Mukherji (1998). In the intensive study by Hall (1995), the author questions the causality effect on diversification and performance. Hall (1995) suggested that the diversification strategy is influenced by prior performance and not the other way round. The incentive to diversify due to lower prior profitability would bring a positive impact on performance. In contrast, the relationship becomes negative possibly due to the amount of capital required to implement a diversification strategy. Nevertheless, implementation of diversification strategy does not guarantee instantaneous performance improvement, as more capital is required before that strategy brings a positive impact. Thus, the relationship is expected to be negatively related in the short term. In another situation, if firms enter any industry without adequate resources and capabilities, this situation could also bring a negative impact on performance. Even though the evidence is inconclusive on the effect of past performance to influence a decision to diversify, firms to a certain extend rely on past performance to adopt a diversification strategy whether it is related or unrelated. Certainly, firms that have poor performance will diversify more than high profitability firms even though their efforts would not achieve the desired outcome. Therefore, Hall (1995) emphasized no differences between firms that perform related or unrelated strategy as both strategies could be used to improve performance.

Similarly, Mukherji (1998) in supporting literature suggested prior performance influences the choice of diversification. Industry profitability has an important role to determine the future of firms' performance. The author, however, failed to consider a different category of diversification strategy such as related and unrelated that may be influenced by past performance. Mukherji (1998) suggests that firms that operate in profitable industry perform better compared to those in less profitable industry whereby firms that operate in profitable industry are unlikely to diversify away from current industries.

Therefore, performance discount created by firms that implement diversification strategy is caused by industry profitability regardless of unrelated or related strategy. It could be that firms that perform poorly in less profitability industry are eager to exit or diversify away from that industry. Thus, uncertain outlook of current industries motivates firms to diversify in order to escape from such a situation. However, diversification strategy is a complex issue which does not guarantee firms to perform better. Firms need to consider resources and capabilities before executing unrelated strategy such as strategic assets to create competitive advantage as well assessing industry profitability before embarking on diversification strategy to enhance performance.

Singh, Mathur and Gleason (2004) concur to such suggestion in which poor performance causes firms to change their strategies to improve such situation by taking the right strategy. Unrelated firms may dispose unrelated business as they can focus on the industry that they are more familiar with, while related firms may diversify away from a current industry to escape from low performance. Therefore, the initial condition of past performance has

a role to determine choice of diversification strategy. Changing of diversification does improve performance. Thus, it rejects the contention that suggests firms should remain in industry that they are more familiar with. Furthermore, failure to exit non viable industries that create performance discount to the firms and remain steadfast in those industries would not deliver any positive impact.

Meanwhile, Park (2002) suggests that prior performance of related firms is better than unrelated firms. This is due to related firms operating in high profitable industries. After controlling for industry profitability, the performance of related firms became less significant. Therefore, unrelated firms that have businesses in multiple industries should ensure that they are involved in profitable industries. This situation would create better performance for unrelated firms. In addition, the result indicates that there is not much difference between related and unrelated strategy in delivering better performance to the firms after controlling for industry effect. The result also articulates that it does not matter for firms to have strategic assets or less strategic assets, as long as they operate in a highly profitable industry, performance would improve.

Further investigation found that prior profitability influences related strategy to enhance performance reveals that superior performance of related firms is affected by spurious correlation of prior performance. Therefore, there is no difference between related and unrelated firms to enhance performance. It could be either related or unrelated firms that experience lower performance would pursue a strategic change to improve the current condition while firms at high performance would remain or make fewer changes to their current conditions (Park, 2002)

## METHODOLOGY

The main sources of data for the analysis in this study were derived from Worldscope and Thompson Financial Banker. These databases provide detailed financial information on Malaysian firms. Apart from the two websites mentioned, the data for the study was also gathered from Datastream International and the firms' annual reports available online for the years 1999 to 2007. However, annual reports prior to 1999 (1994-1998) had to be manually-collected from Bursa Malaysia's library.

The sample for this study comprises all public listed firms on the Main Board of Bursa Malaysia Berhad as on May 8, 2010. Initially, there were 638 public listed firms, however, the study immediately excluded 38 firms from the financial sectors in order to maintain the consistency with previous studies in various countries. In addition, the financial sector is highly regulated under BASLE's accord (Ahmad, 2005) and firms' characteristics and level of debt in the capital structure in this industry differed from other industries (Lins and Servaes, 2002). Firms usually publish their annual report soon after they are listed. Firms included in this study has to be listed in 1993 or prior to that. From 600 firms, 442 firms were excluded as the firms were listed in 1994 onwards. There were about 158 firms left, however, 6 firms were excluded due to not having any business and were under distressed which had been classified as PN4 and PN17. 52 more firms were excluded as they performed dynamic strategy in which the firms kept changing their strategy by refocusing or diversifying away, depending on the external environment.

However, there were a few firms which diversified away from the current business after one or two years of implementing related strategy and maintaining the latter strategy for the entire period. Meanwhile the other firms were excluded as they refocused their strategy after one or two years of executing unrelated strategy. They then adopted that new strategy for the whole period under review. Then, there were some firms which then refocused or diversified away again towards the end of the study observation. Inconsistency in executing diversification strategy would not provide a better understanding over which strategy is supposed to be adopted by firms in the long term. In addition, implementation of diversification strategy requires time and cost as firms have to learn how to allocate all the resources more efficiently in order to provide a better return. In the meantime, 21 firms were excluded due to missing data and Worldscope does not provide Standard Industry Classification (SIC) code, three firms were excluded as the firms reported business segment could not be matched with any Standard Industry Classification (SIC) code. After the exclusion process, there were only 76 firms left in the final sample.

Bursa Malaysia identifies and classifies firms under PN17 if the firms do not have a core business. Identification of industry segment was done by using Standard Industry Classification (SIC) code. Now, there are two approaches to measure diversification; business count approach and strategy approach. The business count approach is primarily related to the field of business policy, which stresses on how each business department within a firm is connected to each other. Business count approach presumes that every industry is represented by respective Standard Industry Classification (SIC) code. Referring to this, researcher counted industries as participating firms that use SIC code. SIC code is an assigned code based on the business activities performed by the firms. Two-digit SIC codes reflects the industry of the firms while three-digit SIC codes indicates the sector of the firms within that particular industry. Four-digit SIC codes refers to products or services offered by firms within three and two-digit SIC codes. Moreover, business count approach is more objective in measuring diversification compared to strategy approach (Ishak and Napier, 2004).

A number of studies in developed and developing countries used SIC codes for classifying diversification strategy specifically in Malaysia (Lins and Servaes, 2002; Ishak and Napier, 2004). Therefore, business count approach represented by Standard Industry Classification (SIC) code was used to classify diversification strategy in this study. In addition, the component of business count approach is the Standard Industry Classification (SIC) code, which is internationally recognized as a method to classify economic activities. Albeit, Bursa Malaysia has classified public listed firms into several industries using their own approaches but that classification is too general to meet the purpose of this study. In addition, the study could not be compared to other findings if a different approach to classify diversification firms was adopted.

In Malaysia, there is no database that matched SIC codes with industry segment; therefore, manual matching of SIC codes to industry segments is done in this study. A similar approach has been adopted by several studies in emerging markets particularly in Malaysia. Among them are Lins and Servaes (2002) and Ishak and Napier (2004). There are two methods to manually match SIC codes and industry segment. The first relies on Malaysia Standard Industry Classification (MSIC), which was produced by the Department of Statistics in 2000 and 2005. The study manually matched the industry segment with the

MSIC Code by referring to the business segmentsobtained from the annual reports or the worldscope database. The second option is to depend on the Worldscope database that reports the four-digit SIC codes. By using four-digit SIC codes gathered from Worldscope, the study sample was manually matched with the industry segments.

However, in several cases, the assigned SIC codes in Worldscope database are different from the industry segments reported by a firm. This occurs as firms report industry segments not according to SIC codes; therefore, there are some cases where information of one-industry segment has multiple SIC codes. In overcoming this flaw, this study followed the approach by Ishak and Napier (2004) in determining SIC codes based on the description of business profiles available in annual reports and worldscope database.

The procedure introduced by Lins and Servaes (2002) and Ishak and Napier (2004) were followed in this study in which both studies combined multiple business segments into one segment if represented by similar two-digit SIC codes. There is a similar problem to overcome firms which report information using vertical integration approach. This problem occurs when firms report combined revenues from multiple businesses. Ishak and Napier (2004) then divided the revenues equally based on SIC codes and assigned them to each business segment. This procedure was done to minimize the numbers of firms being excluded from the sample, though some studies excluded firms which reported manufacturing and trading as one segment. This issue arises because most firms did not report their business segments according to the available SIC codes (Ishak and Napier, 2004).

Afterwards, the data was collected from the period of 1994 to 2007. Firms were considered in this sample if they maintained a similar strategy throughout the period. The study could not extend beyond that period because it would substantially reduce a number of firms in the sample as a firms' strategy keeps changing over time and prolonging the period might reduce the number of firms with complete financial information (Syed and Rao, 2004).

## Research Design and Variables

This research began with data gathering from reliable sources such as the Bursa Malaysia, Worldscope, Thomson Financial Banker and Datastream databases. The firms were later identified and classified into related or unrelated groups based on some recognizing measurements. A dummy variable was used to differentiate between these two types of strategy, (related = 0; unrelated = 1). A similar approach was used by Santalo and Becerra (2008) in examining the effect of related and unrelated strategy on performance. This study analyzes the characteristics of related and unrelated firms. The reason as stated by Lecraw (1984) is that firms' characteristics have an influence on the selection of diversification strategy. Other data such as financial information were also collected from Worldscope. Several tests were done to measure normality, stability and reliability of the data through normality testing and stationary test. Each of these is important to ensure reliability of the data.

Subsequently, descriptive statistics that summarize the profile of data were analyzed together with the correlation between variables to ensure the observed data is free from

multicollinearity, autocorrelation and heteroscedasticity. Estimation models and methods were then developed to examine the relationship between independent and dependent variables. Logistic regression analysis was used to examine prior performance effect on choice of diversification strategy. This was done by using dummy as a dependent variable in which related strategy was coded as 0 while unrelated strategy as 1.

All variables used in this study are within the control of the firms. These variables also reflect resources and capabilities that the firms have to enhance performance. The firms might choose a related strategy if they have certain strategic assets while firms with less strategic assets could implement an unrelated strategy. For the firms to acquire strategic or less strategic assets, it needs capital which could be obtained using retained earnings, equity and debt. All these sources of funding are on the right hand side of firms' balance sheets. Therefore, resource allocation is important to determine the performance of the firms.

This study used time series data to establish the relationships that have been identified in the model. The estimation method applied to estimate the results is an ordinary least square on the transformed variables that satisfies the standard least-squares assumptions. The ordinary least square adopts the criterion of minimizing sum of residuals squares. The residuals were given identical weight regardless of whether some of the residuals are much nearer to the sample regression function.

## Dependent Variables

### a. Diversification Strategy

Firms implement a diversification strategy based on resources and capabilities available in the firms. For the firms with more strategic assets, they might choose a related strategy while for less strategic assets, unrelated strategy might be chosen (Kochhar, 1996). Therefore, diversification strategy represents the capability of the firms to allocate resources to maximum. As allocation of resources is important for the firms, therefore, this study aims to examine the impact on performance. Firms in this study are collected based on procedure by Syed and Rao (2004) who suggest two types of relatedness strategies; related and unrelated strategy. Firms were classified into either related or unrelated based on total sales.

Therefore, this study defined related strategy as the strategy applied when the firm earned more than 90% of total sales from one-industry segment. Although the report from Worldscope shows firms may have multiple segments, these segments must be matched by standard classification code. Villalonga (2004) mentions that firm that reported single segment in fact may have multiple standard industry classification code which reflects their involvement in multiple industries. However, if the firm earned sales less than 90% from one important industry and also earned income contribution from multiple industries, then the firm is classified as an unrelated firm. This method is consistent with Lins and Servaes (2002) who documented unrelated strategy as firms that derived less than 90% of total sales from one important segment while those that earned above 90% of total sales as related strategy.

## Independent Variables

### a. Risk Adjusted Return

Risk adjusted return need to be incorporated in examining the effect of diversification and debt on performance. This view has been supported by Kim, Hwang and Burgers (1993) who mentioned less risky projects are selected among the projects that provide only at par return. Risk adjusted return has been discussed in literature, among them are Montgomery and Singh, 1984; Chang and Thomas, 1989; Kim et al., 1993 and more recently by Syed and Rao, 2004.

This measurement is recommended by previous studies that firms would comprehend the issues related to risk and return while pursuing a diversification strategy and employ more debt. As indicated by Varaiya, Kerin and Weeks (1987), firms should continue their current practice if it provides a better return as compared to risk incurred. Thus, the following definition was used in this study:

$$\text{Return per Unit Risk} = \frac{\text{Return on Assets}}{\text{Standard deviation of ROA}}$$

SDROA = the standard deviation of a firm's return on assets over the study period

### b. Debt

The capital structure is usually described as selection of debt over equity financing. Financing decision is important for the firms as financial resources are derived from the right hand side of the balance sheet. With financial resources, firms decide to purchase assets for their business. Therefore, selection of financing decision determines performance. Kochhar (1997) suggests that financial strategy is more important and should receive more attention from management to enhance performance. In explaining the capital structure decision, literature used debt as a proxy for capital structure, among the reasons is due to the risk that attached to it. Failure in meeting the debt obligation would result in a probability of bankruptcy.

Many proxies were used in the literature to identify debt ratio to establish the relationship between debt and performance. A widely used definition for debt ratio is total debt over total assets where total debt comprises of short and long term debts that have been used by firms for their business expansion.

$$\text{TDA} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$$

**c. Capital Expenditure**

Firms with financial resources could purchase more strategic or non-strategic assets to expand their business. The action may be reflected in the capital spending made by the firms. As explained earlier, firms with more strategic assets usually prefer related strategy route over unrelated strategy. The decision to purchase assets certainly has an impact on performance as firms acquire assets based on investment opportunity to grow their business. Chen (2006) explained that growth opportunity which is associated to capital spending on strategic assets benefits related firms more than unrelated firms.

Capital expenditure ratio = Capital Expenditure / Total assets.

**d. Cash Flow**

Jensen (1986) suggests that excess cash flow could lead firm to implement unrelated strategy which cause performance discount. The situation indicates that firms used its own internal generated financial resources to diversify their earnings. With excess cash flow, firms also could afford to adopt more debts in their capital structure. High level of debt would assist firms to discipline managers from taking the diversification route that cause performance deterioration, which in turn, excess cash flow could enhance performance (Slater and Zwirlein, 1996). In contrast, insufficient cash flow could lead firms to the possibility of bankruptcy (Coyne and Singh, 2008). The following definition is used:

$$\text{Cash Flow Ratio} = \frac{\text{Net Income + Depreciation + Ammortization + Depletion}}{\text{Total Assets}}$$

**e. Liquidity**

The level of liquidity indicates the resources and capabilities that the firms have. Healthy condition that meets short term obligation would avoid from any default of payment. In contrast, the inability of the firms to meet their obligations may disrupt their business operation and it may reflect in their performance. Therefore, liquidity needs to be controlled in order to have more understanding on the issues that are being focused on this study. The following definition is used to control liquidity effect.

Current Ratio: Current Liabilities / Current Assets

**a. Size**

In examining the impact of diversification strategy and debt on performance, size needs to be controlled. Size indicates resources and capabilities of the firms. Large firms are regarded as having more resources and capabilities as compared to small firms. With more resources and capabilities, firms have certain flexibility to adjust themselves to enhance performance. Mitton (2007) mentioned that large firms have more debt than small firms, this situation indicates the capability of large firms to raise more external financial resources. Moreover, the default risk for a large firm is lesser as this firm is usually more diversified as compared to a small firm (Eriotis, 2007).

Similarly, large firms could possibly diversify their business as they can implement unrelated strategy more effectively (Chang and Thomas, 1989) where they can use their resources efficiently and minimize downside risk, which in turn could increase firms' performance (Tongli Kwok and Ping, 2005). The following definition has been used.

Firm Size = Logarithm (Total assets)

## Estimation Model

Choice of diversification could be comprehended by using logistic analysis. Logistic analysis requires a dependent variable to be discrete and not continuous. In regressing by using logistic analysis, the dependent variable should be represented by dummy variables (coded 0, 1). Logit P (i) is the log odds on choice of diversification for each firm subject to a certain group of independent variables. $P_i$ matches to 1 if the firms choose unrelated strategy and equal to 0 for related strategy. The use of logistic regression has been discussed by Gujarati (2003). This application enables the study to inspect the association between independent and dependent variables, thus, understanding the reason why firms choose a specific strategy type for their firms.

**a. Logit Model for Diversification Preference**

The following model was developed to test the effect of diversification on performance. The model was developed in understanding which factors induced the selection of strategy type. The logit model was constructed to meet the said purpose.

**Model 1**

$$Ji = \ln \left[ \frac{P(i)}{1 - P(i)} \right] = \beta_1 + \beta_2 \, size_{it} + \beta_3 \, cf_{it} + \beta_4 \, liq_{it} + \beta_5 \, ce_{it} + \beta_6 \, tda_{it} + \beta_7 \, rur_{it} + \acute{\omega}it$$

Where :

Ji: Binary variables that are related strategy equal to 0 and unrelated strategy equal to 1
SIZE: size is proxied by the logarithm of total asset
CF: cash flow is proxied by net income, depreciation and amortization over total sales

LIQ: liquidity is proxied by current assets over current liabilities
CE: capital expenditures are proxied by investment in fixed assets over total sales
TDA : debt is proxied by total debt over total asset
RUR: risk adjusted return is proxied by the standard deviation of return on assets

**b. Maximum-Likelihood Estimation of the Logit Model**

The maximum likelihood estimation is beneficial as it allows computation of estimates of the parameters of the model without utilizing residual or other computation that are not rational in the case of logit model. As for Model 5, the study could not estimate the individual data by the standard Ordinary Least Squares; therefore, maximum likelihood method was employed to estimate the parameters. The method of maximum likelihood allows the study to estimate the unknown parameters in a way to maximize the likelihood of the data set being observed (Gujarati, 2003). By estimating those parameters, the strategy selected by a firm could be comprehended

**c. Goodness Fit of Logit Model**

In every regression analysis, the model needs to be checked to ensure how well the model fits the sample data. Normally, the coefficient of determination is used to measure goodness of fit for the linear probability model. However, in the case of logit model, that method was insufficient to measure the goodness of fit, therefore, the McFadden pseudo was used to compare a logit equation with a certain restriction imposed to ensure the goodness fit of the model (Thomas, 2005). Another test was conducted to check the goodness fit of model by using Hosmer and Lemeshow test whereby the insignificant result means that the model is fit.

## Hypotheses Development

The null hypotheses of the relationship between performance effect on choice of diversification strategy. Rejection of null hypotheses that explain diversification strategy is affected by prior performance.

*$H1_0$: There is no effect of prior performance on choice of diversification strategy*

## RESULTS

Descriptive statistics is presented in Table 1. It shows the means, medians, and standard deviations, skewness, kurtosis (the height) and Jarque Bera (the variation of the distributions) for each variable used in the study. Skewness test should equal to 0, the kurtosis value should not exceed three and Jarque Bera should not significant then, the data could be assumed as normal. The data clearly shows that it violates the said assumption, therefore, the data is considered as not normally distributed.

**Table 1** Descriptive Statistics

| | Mean | Median | Max | Min | Std. Dev. | Skewness | Kurtosis | Jarque-Bera |
|---|---|---|---|---|---|---|---|---|
| RUR | 1.3282 | 1.0961 | 7.9363 | -3.3848 | 1.5868 | 0.5027 | 3.9236 | 76.7370*** (0.0000) |
| TDA | 0.4054 | 0.3969 | 0.9456 | 0.0206 | 0.1956 | 0.2059 | 2.2031 | 33.1288*** (0.0000) |
| CE | 0.6460 | 0.0557 | 58.1745 | 0.0009 | 3.5088 | 9.5919 | 119.3458 | 572396*** (0.0000) |
| LIQ | 0.0389 | 0.0325 | 1.6317 | -1.7435 | 0.3628 | 0.0672 | 6.1972 | 421.5433*** (0.0000) |
| CF | 0.0783 | 0.0662 | 0.7071 | -0.4212 | 0.0846 | 1.0834 | 12.4485 | 3868.411*** (0.0000) |
| SIZE | 7.0322 | 6.9207 | 11.1232 | 3.8344 | 1.3181 | 0.4813 | 3.2031 | 39.8432*** (0.0000) |
| SD | 0.579 | 1.000 | 1.000 | 0.000 | 0.494 | -0.3198 | 1.1022 | 165.0973*** (0.0000) |

*** Significant at 1 percent level
** Significant at 5 percent level
* Significant at 10 percent level

In Table 2, the study presents mean differences between two different categories of diversification strategy.

**Table 2** Mean difference

| Variables | N | Mean Rank | Sum Of Ranks | Z-Score | 2-tailed |
|---|---|---|---|---|---|
| RUR | 416 (0) | 561.15 | 233439.00 | -6.261 | 0.000*** |
| | 572 (1) | 446.03 | 255127.00 | | |
| TDA | 416 (0) | 455.56 | 189512.50 | -3.658 | 0.000*** |
| | 572 (1) | 522.82 | 299053.50 | | |
| CE | 416 (0) | 424.38 | 176543.00 | -6.587 | 0.000*** |
| | 572 (1) | 545.49 | 312023.00 | | |
| LIQ | 416 (0) | 513.02 | 213417.50 | -1.740 | 0.082* |
| | 572 (1) | 481.03 | 275148.50 | | |
| CF | 416 (0) | 650.00 | 270398.50 | -14.607 | 0.000*** |
| | 572 (1) | 381.41 | 218167.50 | | |
| SIZE | 416 (0) | 379.86 | 158020.50 | -10.769 | 0.000*** |
| | 572 (1) | 577.88 | 330545.50 | | |

*** Significant at 1 percent level
** Significant at 5 percent level
* Significant at 10 percent level

The result clearly shows performance of related diversified firms is better than unrelated diversified firms. This is consistent with previous studies that suggest related diversified firms could perform better for example Rumelt (1982) and Lins and Servaes (2002). High debt level is observed in unrelated diversified firms than related diversified firms. It could be a reason that unrelated diversified firms reduce performance as failure in managing debt could lead to performance discount.

## Multicollinearity

Table 3 shows a simple bivariate correlation between variables. Multicollinearity is detected when the bivariate correlation is higher than 0.80. Gujarati (2003) suggests dropping any variables that are detected with multicollinearity problem. The correlation between debts and performance in unrelated diversified firms shows that negative influence with performance. The result supported previous evidence offer by Lins and Servaes (2002) that unrelated diversified firms create performance discount, it could be due to level of debt in the firms.

**Table 3** Pearson Correlation

| | RUR | TDA | CE | LIQ | CF | SIZE |
|---|---|---|---|---|---|---|
| **TDA** | -.280(**) | | | | | |
| | .000 | . | | | | |
| **CE** | -.081(*) | .023 | | | | |
| | .011 | .479 | . | | | |
| **LIQ** | .067(*) | -.134(**) | .024 | | | |
| | .036 | .000 | .456 | | | |
| **CF** | .769(**) | -.155(**) | -.085(**) | .066(*) | | |
| | .000 | .000 | .007 | .037 | | |
| **SIZE** | .016 | .249(**) | .085(**) | -.044 | -.056 | |
| | .622 | .000 | .008 | .165 | .079 | |
| **SD** | -.209(**) | .110(**) | .122(**) | -.029 | -.418(**) | .295(**) |
| | .000 | .001 | .000 | .356 | .000 | .000 |

Note: ** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

| | | | |
|---|---|---|---|
| MR | Market return | CE | Capital expenditure |
| EVA | Economic value added/economic return | LIQ | Liquidity |
| RUR | Risk adjusted return | CF | Cash flow |
| ROA | Return on asset/accounting return | SIZE | Size |
| TDA | Total debt | | |

## Heteroscedasticity Test

White-heterocedasticity test is used to check on heteroscedasticity problem. If the result is significant, then, the data can be assumed to have heterocedasticity problem as reported under Table 4.

$$Ji = \ln \left[ \frac{P(i)}{1 - P(i)} \right] = \beta_1 + \beta_2 \, size_{it} + \beta_3 \, cf_{it} + \beta_4 \, liq_{it} + \beta_5 \, ce_{it} + \beta_6 \, tda_{it} + \beta_7 \, rur_{it} + \acute{\omega}it$$

**Table 4** White General Heteroskedasticity Test

| Variable | SD |
|---|---|
| Chi-square( n.R2) | 325.0542 |
| F statistics | 10.9125 |
| Probability | 0.0000 |
| Accept/ Reject $H_o$ (null): | Reject |

## Prior Performance and Choice of Diversification Strategy

The next analysis is about the effect of prior performance on choice of diversification strategy. In this section, the discussion focused on the issue whether prior performance may influence firms to choose either related or unrelated strategy. This analysis was done in order to answer the objective by using logistic regression.

**Table 5** Performance and choice of diversification

| Variables | B | Exp(B) (Odds-Ratio) |
|---|---|---|
| Constant | -1.911 | 0.148 |
| | (0.470) | |
| RUR | 0.124* | 1.132 |
| | (0.066) | |
| TDA | -0.005 | 0.995 |
| | (0.005) | |
| CE | 0.002** | 1.002 |
| | (0.001) | |
| LIQ | 0.107 | 1.112 |
| | (0.224) | |
| CF | -0.187*** | 0.829 |
| | (0.018) | |
| SIZE | 0.525*** | 1.691 |
| | (0.067) | |
| Model Chi square(df) | 296.996(6) | |
| Block Chi square(df) | 296.996(6) | |
| percent of correct Prediction | 75.9 percent | |
| Cox and Snell $R^2$ | 0.278 | |
| Nagelkerke $R^2$ | 0.374 | |

Note: Figure in parenthesis is the Standard Error **Significant at 5 percent level
***Significant at 1 percent level *Significant at 10 percent level

This model in Table 5 yields a satisfactory result based on the Pseudo $R^2$. The Cox & Snell $R^2$ and the Nagelkerke $R^2$ exhibit in Table 4.5 showed that most predictions are accurate. The $R^2$ values attained were considered in the acceptable level but at the low end. The overall percentage which was correctly predicted seemed good at 75.9%. The value of the chi-square test statistics was 296.996 for this model. This test considers all factors including performance as lagging variables that affected any decision to adopt either related or unrelated strategy. Thus, the result of the Chi-square test showed that the predictor variables used were statistically significant in explaining the choice of diversification. This model yielded the Cox and Snell $R^2$ and Nagelkerke $R^2$ of 0.278 and 0.374 respectively as well as -2 log likelihood at 944.473, thus, it indicated the model was fit but further test must be conducted using Hosmer and Lemeshow test.

Hosmer and Lemeshow test is a further test to determine whether the model was fit or not to predict the values. The result showed that the significant level of Chi-square value in Hosmer and Lemeshow test was at 0.000. This means that model rejects the null hypothesis, hence, the model did not fit the data well. Consequently, there is a difference between the observed and predicted values.

**Table 6** Performance and choice of diversification

| Variables | B | Exp(B) (Odds-Ratio) |
|---|---|---|
| CONSTANT | 0.288 | 1.333 |
| | (0.188) | |
| RUR | -0.231 | 0.794 |
| | (0.046) | |
| TDA | 0.007* | 1.007 |
| | (0.004) | |
| CE | 0.002*** | 1.002 |
| | (0.001) | |
| LIQ | -0.150 | 0.861 |
| | (0.194) | |
| Model Chi square(df) | 61.549(4) | |
| Block Chi square(df) | 61.549(4) | |
| percent of correct Prediction | 61.4 percent | |
| Cox and Snell $R^2$ | 0.065 | |
| Nagelkerke $R^2$ | 0.088 | |

Note: Figure in parenthesis is the Standard Error **Significant at 5 percent level

***Significant at 1 percent level *Significant at 10 percent level

Since the above model in Table 4.5 did not fit the data, the study decided to drop several variables that possibly contribute to such unfit model. Once the study ignored the variables of cash flow and size, the test for Hosmer and Lemeshow test became insignificant as well as -2 log likelihood at 1179.919. The result is shown in Table 4.6. In addition, The Cox and Snell $R^2$ and the Nagelkerke $R^2$ exhibited in Table 4.6 show that most of the predictions were accurate. The $R^2$ values attained were considered at the acceptable level. The overall percentage which was correctly predicted seemed good at 61.4%. The value of the chi-square test statistics was 61.549 for this model. This model yielded the Cox and Snell $R^2$

and Nagelkerke $R^2$ of 0.065 and 0.088 respectively. Meanwhile, Hosmer and Lemeshow test produced an insignificant value at 0.756, therefore, the model failed to reject the null hypothesis. Hence, there was no difference between observed and predicted values and the model fitted the data well.

## DISCUSSION AND CONCLUSION

The study investigates prior performance effect on choice of diversification strategy. Past performance reflects financial resources that the firms have which can be used for future implementation of diversification strategy. Higher performance could lead firms to diversify into related business or remain in current industry while low performance usually lead firms to diversify away from existing business. As explained by Kochhar (1997) that firm' resources could be used to purchase strategic and non strategic assets. Strategic assets could lead firms to diversify to related strategy while non strategic assets cause firms implement unrelated strategy. Both strategies could influence performance in which higher performance on respective strategy would result in the firms consistently adopting a similar strategy. In contrast, low performance possibly leads firms to diversify from existing business or refocus their business by disposing unrelated business.

Thus, the study suggests that diversification strategy does not enhance performance instead past performance determines the choice of diversification strategy. The evidence is consistent with Burgers et al. (2009) that articulated diversification strategy does not influence performance but past performance determine the choice of diversification. The authors implied that lower earnings prospects and high past profitability lead firms do such action. This condition could motivate firms to adopt a related strategy, which consistent with the current result.

Evidence from this study suggests that firms that have dismal performance diversify away from the current industry in looking for better growth of earnings. For a moment, the firms could have a few businesses before starting to focus on a new business when the business generates sufficient income to them. By focusing on a single industry, firms could improve through better utilization of resources.

Despite the above contradiction, Burgers et al. (2009) remind that no specific strategy is suitable in any environment whereby the implementation of diversification strategy must depend on opportunities and threats in particular environment. Meanwhile, Singh et al. (2004) support such view in which low performance gives a reason for firms to change their strategy either to related or unrelated strategy. It could probably be a right strategy if firms change their strategy depending on the favorable surrounding environment.

## REFERENCES

Ahmad, I. (2005). Islamic financial design and capital structure. *Unpublished Thesis*, Universiti Kebangsaan Malaysia (UKM).

Burgers, W., Padgett, D., Bourdeau, B. and Sun, A. (2009). Revisiting the link between product and industry: Diversification and corporate performance. International Review of Business Research Papers, 5, 367–379.

Chang, Y., and Thomas, H. (1989). The impact of diversification strategy on risk-return performance. *Strategic Management Journal*, 10(3), 271–284.

Chen, S.-S. (2006). The economics impact of corporate capital expenditures: Focused firms versus diversified firms. *Journal of Financial and Quantitative Analysis*, 41(2), 341–355.

Daud, W.M.N.W.D., Salamudin, N. and Ahmad, I. (2009). Corporate diversification and performance. *International Business and Education Journal*, 2, 1–15.

Eriotis, N. (2007). How firms characteristics affect capital structure: An empirical study. *Managerial Finance*, 33(5), 321–331.

Geringer, J.M., Tallman, S. and Olsen, D.M. (2000). Product and international diversification among Japanese multinational firms. *Strategic Management Journal*, 21(1), 51–80.

Gujarati, D.N. (2003). Basic Econometrics. 4th Edition, McGraw Hill Education.

Hall, E.H. (1995). Corporate diversification and performance: An investigation of causality. *Australian Journal of Management*, 20(1), 25–42.

Ishak, Z. and Napier, C. (2004). Corporate ultimate ownership and corporate diversification in Malaysia. *Accounting Conference in Singapore*, *Fourth Asia Pacific Interdisciplinary Research*.

Jensen, M.C. (1986). Agency costs of free cash flow, corporate finance and takeovers. *The American Economic Review*, 76(2), 323–329.

Kim, W.C., Hwang, P. and Burgers, W. P. (1993). Multinationals' diversification and the risk-return trade-off. *Strategic Management Journal*, 14(4), 275–286.

Kochhar, R. (1996). Explaining firm capital structure: The role of agency theory vs. transaction cost economics. *Strategic Management Journal*, 17(9), 713–728.

Kochhar, R. (1997). Strategic assets, capital structure and firm performance. *Journal of Financial and Strategic Decisions*, 10(3), 23–36.

Lecraw, D.J. (1984). Diversification strategy and performance. *The Journal of Industrial Economics*, 33 (2), 179–198.

Lins, K. and Servaes, H. (2002). Is corporate diversification beneficial in emerging markets. *Financial Management*. Summer, 5–31.

Mishra, A. and Akbar, M. (2007). Empirical examination of diversification strategies in business groups; Evidence from emerging markets. *International Journal of Emerging Markets*, 2(1), 22–38.

Mitton, T. (2007). Why have debt ratios increases for firms in emerging markets. *European Financial Management*, 14(1), 127–151.

Montgomery, C.A., and Singh, H. (1984). Diversification strategy and systematic risk. *Strategic Management Journal*, 5(2), 181–191.

Mukherji, A. (1998). The relationship between prior performance and diversification: A study of three industries. *Management Decision*, 36(3), 180–188.

Park, C. (2002). The effects of prior performance on the performance on the choice between related and unrelated acquisition: Implication for the performance consequences of diversification strategy. *Journal of Management Studies*, 37(7), 22–2380.

Ramirez, M.A. and Espitia, M.A. (2002). The impact of product diversification strategy on the corporate performance of large Spanish firms. *Spanish Economic Review*, 4, 119–137.

Rumelt, R.P. (1982). Diversification strategy and profitability. *Strategic Management Journal*, 3(4), 359–369.

Santalo, J. and Becerra, M. (2008). Competition from specialized firms and the diversification-performance linkage. *The Journal Of Finance*, LXIII(2), 851–883.

Singh, M., Mathur, I. and Gleason, K.C. (2004). Governance and performance implications of diversification strategies: Evidence from large U.S firms. *The Financial Review*, 489–526.

Slater, S.F. and Zwirlein, T.J. (1996). The structure of financial strategy: patterns in financial decision making. *Managerial and Decision Economics*, 17(3), 253–266.

Syed, L.A.M. and Rao, N.V. (2004). Diversification, financing decision and performance: An empirical evolution. *Journal of Business and Public Affairs*, 32–39.

Thomas, R.L. (2005). Using Statistic in Economics (1st Ed.). McGraw Hill Education.

Tongli, C.L., Ping, E.J. and Chiu, K.W.C. (2005). International diversification and performance: Evidence from Singapore. *Asia Pacific Journal of Management,* 22, 65–88.

Varaiya, N., Kerin, R. A., and Weeks, D. (1987). The relationship between growth, profitability, and firm value. *Strategic Management Journal*, 8(5), 487–497.

Villalonga, B. (2004). Diversification discount or premium? New evidence from the business information tracking series. *The Journal of Finance*, LIX (2), 479–506.

Wernerfelt, B. (1984). A resource based view of the firm. *Strategic Management Journal*, Vol.5, 171–180.