Corporate Diversification and Key Determinants?

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Abstract: Corporate diversification is a strategy that enables corporations to expand their core business into other businesses. In Malaysia, corporate diversification continues to represent a fundamental organisational structure. Some two-thirds of Malaysian firms are diversified. However, when compared to developed countries such as the U.S. and the UK we find that firms are moving towards non-diversification. The study is based on the population framework consisting of all of the public limited companies (PLCs) listed on the Bursa Malaysia stock exchange from 2007 to 2012. A dynamic panel model system generalized method of moments (GMM) was used to analyse the corporate diversification and key determinants. The research provides answers to close the literature gaps, by using entropy and relatedness, which reflected the actual degree of diversification better than those studies that used conventional dummy variable methods and were unable to explain the degree of the diversification and key determinants. The empirical findings demonstrated that diversification is better than non-diversification firms for the curvilinear relationship between diversification and firm performance (ROA and Tobin's Q) when using entropy index and relatedness is taken into consideration. The research further concluded that the relationship of free cash flow (FCF) and growth opportunities has a similar positive effect toward corporate diversification.

1. INTRODUCTION

This study focuses on corporate diversification and key determinants such as ownerships, free cash flow (FCF) and growth opportunities (GO). Corporate diversification strategies area common strategy of firms, enabling them to develop the firm's core business into other businesses or increase the variety of business, services, products, or markets. A diversified firm can be considered as having operations in more than onebusiness unit in the different industry or a same industry. Corporate diversification can also be defined as the process by which firms extend the range of their businesses outside those in which they are currently engaged. Corporate diversification strategies are used to gain competitive advantage over other firms,

helping the firm to expand beyond its core business. However, continual investmentsoutside the core business must offer unique business strengths and protect firm resourcesthat allow for a sustainable competitive advantage. Throughcorporate diversification, the organisation must retain long-term consistency and internal fit,which are needed to ensure the sustainability of its competitive advantage.

Nevertheless, in the current context, corporate diversification seems to garner much attention, and the impact of corporate diversification has been widely debated, implying that corporate diversification often creates several dilemmas. Overall, literature on corporate diversification and firm performance, especially as it relates to developing countries, is fairly scarce, and scholars have not reached any consensus on the issue. In general, it is difficult to generalize statements related to both developing and developed countries. A few scholars have argued that performance of a firm is associated with corporate diversification. Generally, a firm's financial performance is due to its management capabilities. However, some predictions can be made regarding market conditions in developing or developed markets.

For the past few decades, Malaysia's leading companies have changed their corporate strategies many times. In recent years, corporate diversification strategies have been employed as a major corporate strategy, leading firms to an extremely competitive advantage. By adopt corporate diversification strategies, firms may be able to survive or prolong corporate life span.

In order to maintain their competitive advantage, Malaysian firmshave become aggressively involved in all types of corporate diversification over the past ten years. To survive, often they must move away from their core business and diversify into new business areas. In general, Malaysian corporations are considered very small in terms of market capitalization, and it is very difficult to diversify. However, in terms of corporate diversification, firms in Malaysia are more aggressive than developed countries.

2. CONCEPTUAL DEVELOPMENT AND RESEARCH HYPOTHESES

2.1. Studies on Developed Countries

Rumelt (1974) argued that the theoretical foundation of positive corporate diversification effectsonfirm financial performance was derived from the concept of economies of scale. Corporate diversification provides an opportunity tofully utilise the resources and achieved economies of scale, lowering cost structure and increasing profitability.

According to Berger & Ofek (1995) and Servaes & Lins (1999), the majority of non-diversified firm performance better than diversifiedfirms. Diversified firm financial performance discount is as high as 15%. According to Martin and Sayrak (2003), corporate diversification discount occurs in diversified firms and non-diversified firms.They also found that the more the firm diversified into related corporate diversification, the better the firm's financial performance.

Qian, Li, Li and Qian (2008) further examined the largest U.S. firms from 1996 to 2000 to determine how diversification, especially regional or international diversification,affects a firm'sfinancial performance. Corporate diversification is positively related to firm financial performance at the beginning stage, but further diversification may cause the effect to change from positive to negative. Further, the researchers concluded that the curvilinear effect was present in corporate diversification and firm financial performance. They also found that all corporate diversifiedfirms do have a maximum point at which a firm'sfinancial

performance will increaseup to a maximum point, after which time it will start to turn to negative and diminish the firm's financial performance.Kuppuswamy and Villalonga (2010) used the Compustat Industry Segment database from 1977 to 2009 in the U.S. to select a sample of 4,370 firms. They found that diversified firms increase but more focus on related diversification

Delios, Zhou and Xu (2008) used 815 listed firms in China as their sample and measured the implications of firm ownership and corporate diversificationfound that non-diversified firms always outperformed diversified firmsamong family-owned and government-owned firms. Allen, Iftekhar and Mingming (2010) investigated 88 Chinese banks from 1996 to 2006 using the Bankscope database. They found that on average, Chinese banks suffer a diversification discount compared to non-diversified banks. Most recently, a research study by Choe (2014) based on 766 Australian firms from 2004–2008 indicated that corporate diversification yields positive returns for a firm's financial performance. The positive return on average is 12.4% to 18%.

2.2. Studies on Developing Countries

Few scholars have conducted corporate diversification research in developing countries. However, scholars have randomly selected a few samples of countries from the region to conduct research. For example, Lins and Servaes (2002) conducted a study on Malaysia, South Korea, Hong Kong, Thailand, India, Singapore, and Indonesia in 1995 and found that non-diversified firm performance is much more better than corporate diversified firms. This study only focused on the Asian region and not a particular country, and as a result, it may not represent the totality of corporate diversification in particular countries.

Daud, Salamudin and Ahmad (2009) in a study of Malaysia using 70 firmsfrom 2001 to 2005, concluded that diversification does yield poor financial performance compared to non-diversified firms. However, the sample size is too small to represent all Malaysian firms. Due to the inconsistency of the results on corporate diversification, a new approach was discovered by testing the curvilinear behaviour between corporate diversification and firm performance. Palich, Cariniand Seaman (2000) supportedthe curvilinear model in the corporate diversification strategies and firm financial performance. Theyfound thatfirm financial performanceincreases as firms start to diversify. However, additional increases in corporate diversification in later stages may reduce the marginal profit of the firm and slowly turn from positive to negative. The situation is worse when the firm initiates' diversification to related businesses and in later stages diversifies into unrelated business.However,there is a research gap in a study by Palich et al. (2000), whichdid not examine the details of this curvilinear relationship by separating the samples into related and unrelated corporate diversification strategies. Palich et al.'s (2000) study focused exclusively on general corporate diversification. Narasimham and Kim (2002) analysed the impact of managing a portfolio ofbusinesses on the firmandfirm financial performance suggested that it is related to the extent the firm diversifies in markets, as well as the route chosen; both will also have a positive impact on firm financial performance that will slowly, over time, turn into a negative impact on firm financial performance.

Most recently, Zahaviand Lavie (2013) reported a curvilinear relationship betweencorporate diversification strategies and revenue growth based on a study of 156 software firms in the U.S. from 1990 to 2001. They reported a negative association with related diversification due to the high similarity of the products offered and an inability to differentiate the main product from the rest of the products, which caused a reduction in revenue. The study also demonstrates that the degree of increases in corporate related diversification will result in negative performance outcomes. When the degree of corporate

diversification grows, it will cause diseconomies of scope and may result in diminished corporate competitive advantage over others in the industry. As a result, it will cause decreases intotal firm performance.

Hypothesis 1. A corporate diversification strategy has a positive association with firm financial performance

2.3. Determinants of Diversification

One of the key determinants variables that drivesa firm's diversification is ownership. Malaysia's economy is heavily dependent on both family and government ownership structures, and ownership will influence the incentives and motives of diversification. A firm's ownership concentration sets the path in terms of its product line, the choice of competitive arena, as well as the overall strategy for achieving its mission and purpose. Different types of ownership, such as family, government, institutional, and public, may have differences in their expectations regardingcorporate strategy.

According to Ramaswamy, Mingfang and Veliyath (2002),ownership concentration sets the direction and the governance mechanisms by which a firm chooses to diversify.Ownership also determines the size and assets (tangible and intangible), as well as the level of efficiency and effectiveness of managing corporate diversification. They conclude that all owners are driven by the same motivations, which might not be the same for their corporate diversification strategies. Large numbers of firms owned or controlled by family will maintain control of the board of directors in the firm or their close associates, without outsourcing outsiders to their board (Ahlstrom *et al.,* 2004; Chen, 2001). However, the literature review on ownership and corporate diversification is inconsistent. Domsetz and Villalonga (2001) found that ownership is an endogenous variable and has no association with diversification strategies. This was further supported by On-Kit and Monica (2007). Using firms in Malaysia from 1994 to 2001, they found that government ownership isassociated with firm financial performance but has no significant impact on ownership concentration and firm performance. Different types of ownershipalso affect choice of corporate diversification strategies (David *et al.,* 2010).

2.4. Family Ownership

Family-owned firms are common among large and publicly traded firms. Some of the most admired and high-performing businesses in the world have had a family interest driving them and shaping their culture:e.g., Wal-Mart, Samsung, Cargill, Fiat, Motorola, Tata, and Marriott. Some are extraordinarily enduring–two of the oldest, in Japan, claiming 1,300-year histories, and one of Japan's largest firms, Sumitomo, which was founded in 1630. Several European family-owned firms span 20 generations, and in the United States, many firms date back to the middle of the 19th century. Stern (1986) defines family firms as those owned or run by familymembers, especially in Asia (Claessens, Djankov, Fan & Lang, 2002). Family-owned control of the management is through selection of the CEO directly from family members or close relatives in the family tree to maintain close operational control over the firm. In addition, family-owned firms will choose a board of directors from close friends or those who have a powerful connection with local authorities.

Among some of the current family-owned firms in the world, the Samsung and LG Groups from Korea, Tata Enterprise from India, Cheung Kong from Hong Kong, China, L'Oreal Group from France, Asian Pacific Buildings Corporation from Australia,and Bosch Group from Germany are examples of

large and successful businesses located around the world. Consequently, family-ownedfirms are almost always able to control managers, and they in turn increase the management cost especially agency costs. Among Asiancountries,a few very large firms are still dominated by family members, such as Samsung (Korea), Hope Group (China), and Genting (Malaysia). The majority of small business firms are controlled by family, and a similar pattern is found in some European countries,including Italy, France, Spain, and Germany, as well as Mexico. The majority of family-owned businesses that are set up by the founder are still controlled by the founder or the founder's family members. Considering the literature review above, the following hypothesis is formulated.

Hypothesis 2. There is an association between family-owned firms and corporate diversification strategy.

2.5. Government Ownership

The government is a major player and controls the development of countries in the majority of developing countries. The government does have a balancing role of sustaining growth and addressing the social responsibilities of the people. Government-owned firms provide support for the development of countries, especially social welfare. Government-owned firms typically have motivations that are not the sameas those of privately owned firms. Government-owned firms will balance the growth of the nation, social responsibilities and their political interest (Shleifer & Vishny, 1994).Shieh (1999) used 1,178 listed firms in China's Shanghai and Shenzhen stock exchanges to show that government ownership can lead a firm to pursue a high level of corporate diversification. The Chinese government encouraged the development of conglomerates because their belief is based on the success stories of Japan and Korea related to corporate diversification. It is best to use government and industry policy to support the growth of large conglomerates that can compete in the global marketplace.

Barth, Caprio and Levine (2004) used a database of 107 countries from Bankscope.They found that government-owned banks arenot regulated like privately owned banks. Regulatory efforts are negatively correlated with government ownership. They concluded that greater government ownership is generally associated with less efficient and less well-developed financial systems but strong contributions to the nation. Delios, Zhou andXu (2008) conducted research on government-owned firms in Japan, South Korea, China and Thailand during times of economic downturn, arguing that companies that have been pursuing growth at the expense of profitability targets are most likely to be at risk of not surviving the downturn. However, in China, the decision to diversify among government-owned firms is influenced by the political agenda rather than profit maximization or wealth creation. Cornett, Guo, Khaksari and Tehranian (2010) examined how government ownership and government involvement in the banking system affected bank performance for 16 Far East countries from Bankscope from 1997 to 2006. They discovered an interesting pattern of changing performance differences between state-owned and privately owned banks around the Asian financial crisis. They found that government-owned banks'performance is poor compared to privately owned banks or institution-owned banks. They also concluded that government-owned banks are less proûtable than other ownership structures and have more credit risk. Government-owned banks are more focused on political issues rather than business issues. Most recently, Zhao (2010) found that the degree of corporate diversification was higher in government-owned Chinese firms compared with other ownership structures, such as privately owned or institution-owned firms.

According to Amsden and Hikino (1994), firms with an excess of larger cash balances are highly associated with government-owned firms. This is due to the fact that government-owned firms may have political power thatenables them toacquire and deploy policy that may benefit the firm, such as getting operational licences and support for the firm through policies that are friendly to the firm. Resources can be easily shared across all industries, and as a result, diversification is much more easy compared to other ownership firms. Based on Ling and Zheng's (2013) study using data from A-shares ofthe Shanghai and Shenzhen stock exchanges between 2008 and 2010, they concluded that the stakes of the largest shareholders and the degree of corporate diversification are conversely relevant. They also concluded that government-owned firms are less efficient and effective compared to other forms of ownership. Government-owned firms did not have a good monitoring system or lacked methods of implementation, monitoring and checks and balance. Sometimes government-owned firms are too large and tend to focus on the job rather than costs and profits. Government-owned firms tend to diversify into unrelated businesses until they are not able to control them and become a burden to their country and its people.

Laurence, Zamzulaila and Peter (2014), through archival research, concludedthat government mentality frameworks and the concept of hybrids are vital in government-owned firms to compete in the open market. They also concluded that government-owned firms, when implementing corporate diversification strategies, must balance economic and social agendas. They found that the Malaysian government clearly articulated social objectives and at the same time promoted economic development as a set of goals under corporate diversification. They found that economic development was the dominant priority in government budgets prior to the global financial crisis and the 2008 general election, as well as the need to promote economic development whilst also fostering social harmony.Even if those government-owned firms have weak performance, which is what the scholarly research showed, they still play a balancing role between national development and economic growth.

Hypothesis 3. There is an association between a government-owned firm and a corporate diversification strategy.

2.6. Internal Capital (Free Cash Flow)

In developing the free cash flow (FCF) hypothesis, Stulz (1990) argues that leaving excess resources under management control will lead to management's pursuit of its own self-interests and a failure to fullymaximize shareholders' wealth. In reverse, managers would prefer to retain excess liquidity to show that the firm has strong financials or is a cash-rich firm. The empirical literature offers several insights on the free cash flow (FCF) holdings of firms, notably on the determinants of corporate FCF holdings. According Jensen (1986) and Jensen andMeckling (1976), holding large amounts of free cash flow is very costly, and may lead to agency conflicts or unrelated diversification and cash-poor financial performance. Moreover, Brush et al. (2000) found that excess free cash flow has a negative association with broad diversification strategies or diversification into unrelated business where the firm does not have the capabilities to cope with the business and it brings down the firm financial performance. In the end, firms waste a lot of unnecessary resources to maintain the poor performance of that newly diversified business. The business units that perform well and make money will need to cover the losses of those business units that are not performing well, and in the end it will bring down the total financial performance of firms.

DoukasandKan (2004) confirmed a direct negative relationship between corporate diversification and free cash flow in both types of corporate diversification (related corporate diversification and unrelated corporate diversification). According to Ran (2010), corporate diversification strategies result from excessing FCF in the firm normally create a dilemma for firms. It is very hard to create effective strategies. Thesestrategies emphasizethe impact of the risk of corporate diversification and, at the same time, the risk of holding the cash or retaining the cash in firms.The dilemma of firms is on one hand to invest the excess FCF, facing the investment risk and uncertainty of the return, and on the other hand not to invest the excess FCF, facing the risk of returning the excess funds to shareholders.

In generate, firms are normally risk takers, so firms will decide to choose the first choice to diversify. Ran (2010), found that the determinants of corporate diversification such as FCF and growth opportunities, are positively associated with corporate diversification. The more the growth opportunities in the business, the more the firm will diversify. Raffaele, Maurizio and Tiziana (2014) found that firms with larger excess free cash flows tend to do unrelated investment that often result in a huge negative impact to the firm's total financial performance.Diversity due to excess free cash flow should also consider firm resources and capabilities before venturing into diversification.As long as it is not over the limit, diversification should bring positive benefits to firm performance and should encourage future growth. In summary, whether free cash flow influences corporate diversification decision is unclear and may lead tofurther examination of diversification and free cash flows in the context of emerging markets.

Hypothesis 4. There is an association between free cash flow and corporate diversification strategies in both family-owned firms and government-owned firms

2.7. Growth Opportunities of Companies

One way firms can create and capture value is through a firm's growth. This means that firmsmust make decisions regarding their strategies to grow the firm. To grow the firm, one of the determinants is growth opportunities in the firm. However, relatively little research has been conducted on this area of research.

Firm growth opportunities and corporate diversification still lack a clear understanding and patterns to follow. According to Antonio and Bhagwan (2002), based on certain U.S. firms from 1958 to 1988, young firms specialize because they do not have growth opportunities. It might not be worthwhile for them to undertake an investment even after considering the value of information. Firms will differentially value the information generated by the outcomes of their investments, and they will consider diversification when they have growth opportunities. Danbolt, Hirst and Jones (2002), using the data of 278 large UK companies from 1987 to 1995, found that growth opportunities influence corporate diversification strategies and directly affect firm financial performance. Ferris, Sen, Lim and Yeo (2002) conducted research basedon Singapore firms and found that growth opportunities account for firms' corporate diversification strategies. Stowe and Xing (2006) concluded that growth opportunities are directly associated with diversification strategies. The degree of growth is positively associated with the type of diversification. On average, diversified firms have more growth opportunities than non-diversified firms. They also found that growth opportunities are not the primary factors that cause negative firm financial performance.

This research further analyses growth opportunities and corporate diversification strategy relationships. The research did not focus on explaining growth opportunities but focused on the determinant factors of

corporate diversification. Growth opportunities (GOPP) are measured as changes in annual sales (in percentage).Growth opportunities are capital expenditures/total sales.

Hypothesis 5. There is an association between GOPP and corporate diversification strategies in family-owned firms and government-owned firms.

3.1. Measurement of Corporate Diversification Type

Corporate diversiûcation type refers to the type of corporate diversiûcation strategy that involves the element of assessing the relatedness or similarity amongeach of the business units in empirical measurements, normally using Standard Industrial Classification, or SIC code.

Table 3.1
Rumelt Diversification Category

Catagories	*X = Total Revenue*
Single Business	X> 95%
Dominant Business	95 > X > 70%
Related Business	X > 70%
Unrelated Business	X > 70%

Note: Dominant Business mean two or three business units add up contributed at least 70% of total revenue based on two digits SIC codes.

3.2. Measurement Degree of Diversification

Initial measurement of corporate diversiûcation was from the basic type of corporate diversiûcation whichcreated the conceptual and the methodological aspects of the research. The researchers recognize that if the number of business unitsis used to measure diversification, it is an imperfect measurement of corporate diversification as it weights large and small businesses equally. This equalweighting may introduce noise to corporate diversification measurements. The degree of diversiûcation should refer to the number of business units and also to the percentage of revenue generated by the business units to determine the actual contribution of the business units. The degree of diversification was initially based on the Entropy Index of Shanon (1948), and it was later modified by Jacqueminand Berry (1979), who first introduced entropy measurement into strategic management. The entropy measurement was objective, continuous and decomposable. The entropy diversification measurement has been one of the most popular measurements in diversification studies until now.

The total entropy index measure applied in this study is stated below:

$$E = \sum_{i=1}^{n} p_i \ln (1/p); \ 0 < H \leq 1$$

Where Piis the revenue that is contributed by the particular business unit in percentage, and where n is the number of business units in the firm. ln(1/Pi) is the weight. This measurement considers both the number of business units and the degree of each of the business unit contributions.

When the index is 0, the firm is not diversified. The entropy index increases when the degree of corporate diversification strategies increases.

3.3. Measurement of Firm Performance

In the strategic management field, accounting measures (e.g., the money value of operating profit, ROE, and ROA) are widely used (Qian & Li, 2002; Aras *et al.,* 2010). The reason for this is that accounting measurements more closely represent the capital structure of a firm. In most emerging economies (e.g., Malaysia), listed firms are few, and so applying accounting measurements to evaluate performance appears more representative than, for example, using stock price as a surrogate.

In addition to ROA, the Tobin-Q ratio is being used to represent market sentiment. Tobin-Q has been used extensively to measure the performance of firms from several countries, including the U.S., India, Japan and China. The advantage of using Tobin-Q over other accounting-based performance measures is that it includes a market-based measure of expected future earnings as well as current earnings. The Tobin-Q ratio has been used to represent the market value of the firm.

Tobin-Q has been derived by using these formula = Market Value of Firm / Asset of Firm.

The idea behind ROA measurement and Tobin-Q measurement is to examine the firm from two perspectives: one from book value, and the other from market value.

3.4. Measurement Type of Ownership, Free Cash Flow and GrowthOpportunity (GOPP)

Ownership information was hand-picked from the annual reports under the section "Analysis of Shareholdings." The study deûnes family-controlled ûrms as firmsthat are controlled by family members, with voting rights directly and indirectly controlled at a minimum of 20%.This data collection is appropriate,as evidenced by previous studies that collected data on family members by reading the director's profile (Sraer&Thesmar, 2007). To determine the government ownership method is more direct, as the category of government-owned firms that are controlled by more than 20% of the respective state governments,all state economic and development corporations (SEDCs) and other state agencies, were considered government ownership.

Free cash flowis calculated based on World scope data definitions. FCFis operating activities represented by net cash receipts and disbursements resulting from the operations of the company. Growth opportunity (GOPP) of the firmwas measured by the averagevariation of the revenuein the reporting period. The theory of the growth of the firm was used to formulate hypotheses about growth of employment,assets and sales in the years before, during and after a new product introduction according to the research of Oberhoferand Pfaffermayr (2013).

3.5. Control Variables

In accordance with prior research, the researcher tried to control variables that may affect corporatediversification and firm financial performance, such as asset and industry type. A firm's size is theoretically expected to positively influence its profitability. Compared with smaller firms, larger firmsare able to achieve economies of scale and are better able to utilisethe firm's resources. They can also achieve

better productdiversification and larger market share. The second set of control variable covers the industry. The researcher classified the companies according to industry type and used dummy variable to represent the particular industry. The third set of control variables is the economic crisis that happened in 2008. Crisis is an additional control mechanism ineconomic structure that has been argued to affect firm performance.

3.6. Model Specification for Corporate Diversification (EI) and Key determinants.

Below is the model used to measure the corporate diversification and firm financial performance in total firm, related diversification firm and unrelated diversification firm : -

$$
\begin{aligned}
ROA_{it} \text{ or } Tobinq_{it} = \quad & \beta_{1it} + \beta_{2it}\, EI_{it} + \beta_{3it}\, SEI_{it} + \beta_{4it}\, Size_{it} + \beta_{5it}\, Crisis_{it} + \beta_{6it} \\
& CtrCon_{it} + \beta_{7it}\, CtrInd_{it} + \beta_{8it}\, CtrTrad_{it} + \beta_{9it}\, CtrTech_{it} + \beta_{10it} \\
& CtrPlant_{it} + \beta_{11it}\, CtrConstr_{it} + \varepsilon_{it}
\end{aligned}
\tag{1}
$$

Note:

ROA_{it} = ROA_{it} is the firm financial performance measurement for dependent variable of corporate diversification.

$Tobinq_{it}$ = $Tobinq_{it}$ is the firm financial performance measurement for dependent variable of corporate diversification.

EI_{it} = Entropy Index to measure corporate diversification.

SEI_{it} = Square Entropy Index to measure corporate diversification.

Other control variable such as, Crisis (Criss) Size (size) Construction (CTRconstr) Consumer (CtrCon), Industry (CtrInd), Trading (CtrTrad), Technology (CtrTech), Plantation (CtrPlant) and infrastructure (CtrIm).

3.7. Model Specification for Ownership (Family Own (FO) or Government Own (GO) and Corporate Diversification (EI)

$$
\begin{aligned}
EI_{it} = \quad & \beta_{1it} + (\beta_{2it}\, FO_{it} \text{ or } \beta_{2it}\, GO_{it}) + \beta_{3it}\, FCF_{it} + \beta_{4it}\, GOpp_{it} + \beta_{5it}\, Crisis_{it} + \\
& \beta_{6it}\, Size_{it} + \beta_{7it}\, CtrCon_{it} + \beta_{8it}\, CtrCon_{it} + \beta_{9it}\, CtrInd_{it} + \beta_{10it}\, CtrTrad_{it} + \beta_{11it} \\
& CtrTech_{it} + \beta_{12it}\, CtrPlant_{it} + \beta_{13it}\, CtrConstr_{it} + \varepsilon_{it} \text{ --}
\end{aligned}
\tag{2}
$$

Note:

EI_{it} = Entropy Index to measure corporate diversification.

FO = Family Ownership to measure the family ownership based on the 20% shareholding by the family members.

or

GO = Government Ownership to measure the government ownership based on top 30]major shareholder in a company.

FCF$_{it}$ = Free Cash Flow is measured by dummy variable. Free cashflowoffirm i at time t=CFi,t if Tobin-Q is less than 1/=0if Tobin-Q is largerthan1 =1.

GOPP$_{it}$ = Growth opportunities of firm is measured by growth rates of firm.

Other control variable such as, Crisis (Criss) Size (size) Construction (CTRconstr) Consumer (CtrCon), Industry (CtrInd), Trading (CtrTrad), Technology (CtrTech), Plantation (CtrPlant) and infrastructure (CtrIm).

4. RESULTS

4.1. Descriptive Statistics

The research is based on 423 firms in Bursa Malaysia, with 2,538 observations among seven sectors (excluding the banking sector) from 2007 to 2012 using the hand-picked method.

Table 4.1
Number of Firms by Type of Industry

Type of Industry	No of Firm	No of Observation	%
Construction	36	216	0.09
Consumer	100	600	0.24
IND-PROD	43	258	0.10
Infrastructure (IPC)	6	36	0.01
Plantation	34	204	0.08
Property	73	438	0.17
Technology	5	30	0.01
TRAD/SERV	126	756	0.30
Total	**423**	**2538**	1.00

Note: IND-PROD = Industry Product, TRAD/SERV = Trading and Service

4.2. Corporate Diversification (EI) and Firm Performance (ROA or Tobin-Q)

Table 4.2
Corporate Diversification (EI) and Firm Performance (ROA or Tobin-Q)

D.V. Firm Performance	SYS GMM	SYS GMM Robust SE		SYS GMM	SYS GMM Robust SE
	(ROA)	(ROA)		(Tobinq)	(Tobinq)
	H 1.	H 1.		H 1.	H 1.
ROA$_{it-1}$	4.89*** (0.3355804)	2.31** (.3355804)	Tobinq$_{it-1}$	89.34*** (0.2492806)	0.81*** (0.2492806)
EI	5.77*** (10.26)	2.86*** (10.2625)	EI	1.70* (8.890389)	0.77* (8.890389)
SEI	5.56*** (-3.122672)	-2.77*** (-3.122672)	SEI	-1.72* (-2.802947)	-0.78* (-2.802947)
SIZE	-6.47***	-3.08***	SIZE	0.017**	- 0.92**

contd. table 4.2

D.V. Firm Performance	SYS GMM	SYS GMM Robust SE		SYS GMM	SYS GMM Robust SE
	(-1.032778)	(-1.032778)		(-1.136324)	(-1.136324)
CRISIS	0.39	0.3	CRISIS	5.32	4.66
	(.0124183)	(.0124183)		(0.1491564)	(0.1491564)
CON	0.15	0.85	CON	0.24	0.24
	(1.806092)	(1.806092)		(3.02102)	(3.02102)
IND	2.34**	1.38	IND	0.99	0.44
	(1.400471)	(1.400471)		(9.756235)	(9.756235)
TRAD	2.46**	0.159	TRAD	5.63***	1.37
	(1.766225)	(1.766225)		(28.66212)	(28.66212)
TECH	0.024**	1.38	TECH	5.55***	1.36
	(1.709484)	(1.709484)		(28.5695)	(28.5695)
PLANT	1.34	0.76	PLANT	0.14	0.07
	(1.27798)	(1.27798)		(1.579498)	(1.579498)
IM	-0.75	-0.45	IM	-0.76	-0.41
	(-5.826864)	(-5.826864)		(-53.11246)	(-53.11246)
CONSTR	-0.43	-0.33	CONSTR	-0.29	-0.24
	(-.2486583)	(-.2486583)		(-1.188688)	(-1.188688)
Industry effects	Yes	Yes	Industry effects	Yes	Yes
Firm fixed effect	Yes	Yes	Firm fixed effect	Yes	Yes
Year fixed effect	Yes	Yes	Year fixed effect	Yes	Yes
AR(1)	-2.6992***	-2.2172**	AR(1)	-0.96561	-0.84722
AR(2)	.30371	0.29219	AR(2)	-1.0417	-0.97002
Sargan Test	0.1757	__	Sargan Test	0.2818	__
Observation	2115	2115		2115	2115
Instruments	37	37	Instruments	37	37

Notes: The table represents the results from the equation (1) for objective 1 using Models 1 with Panel System GMM (two-step system GMM). ROA_{it-1} is Return of total assets used to measure firm financial performance measured. Tobin-Q_{it-1} ratio is a measurementof the firm's value in the perception of investor or market. ROA_{it-1} and Tobin-Q_{it-1} are the function of corporate diversification dependant variables. EI is the Entropy Index to measure corporate diversification; the more higher the index the more widely diversified the firm is. SEI is the Square Entropy Index to measure corporate diversification on U-curve. CRISIS is the control variables (Crisis)for the crisis effect represented by dummy equal = 0 (2007 -2009) for before and =1 for after. (2010 -2012). Size is a control variable that used logarithm transformed of the total assets to reduce effect on the dependant variable. CONSTR is the control variables for Construction, CON is the control variables for Consumer, IND is the control variables for Industry,TRAD is the control variables for Trading,TECH is the control variables for Technology, PLANT is the control variables for Plantation,IM is the control variables for Infrastructure. Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). T-statistics of system GMM model are based on Windmeijer-corrected standard errors.

The study uses adynamic panel model called the system generalized method of moments (GMM) based on the corporate diversification theory and the firm financial performance theory. ROA ratios and Tobin-Q are used as dependent variables for the results of Models. System GMM is the main estimation.

Referring to Table 4.2, the estimated coefficients are significant for the entropy index (EI) and squared entropy index (SEI). The estimated coefficient forthe entropy index (EI) was positive, whereas the squared term for the entropy index (SEI) was negative. Both have the expected sign, with one positive and the other negative. The study results supported the curvilinear effect in the degree of diversification as measured by the entropy index (EI) and the firm's performance as measured by the ROA relationship. An entropy index (EI) with a coefficient of 10.26 and a Z-value of 5.77is significant at the 1% level and is positively correlated to ROA ratio. The squared term for the entropy index (SEI), with a coefficient of -3.123 and a Z-value of 5.56,is significant at the 1% level and is negatively correlated to ROA ratio.A corporate diversification strategy has a positive association with firm financial performance.

Further test using Tobin-Qratio yields similar results. The estimated coefficients are significant for the entropy index (EI) and squared entropy index (SEI). The coefficient of diversification entropy index (EI) was positive, but the squared for the entropy index (SEI) was negative. Both have the expected sign, with one positive and the other negative.The study results supported the curvilinear effect in the degree of diversification as measured by the entropy index (EI) and firm performance as measured by (Tobin-Q) relationship. The entropy index (EI) with a coefficient of 8.89 and a Z-value of 1.7 is significant at the 10% level and is positively correlated to the Tobin- Q ratio. The squared term for the entropy index (SEI), with a coefficient of -2.80 and a Z-value of-1.72, is negatively correlated toTobin-Q ratio and is significant at the 10% level.

On the other hand, control variables under model ROA, size of the firm, has -1.032 negative coefficients with a Z-value of -6.47 and is significant at the 1% level. This demonstrated that the size of the firm did affect firm performance. The crisis effect on the dependent variables Z-value 0.39 is not significant at the 10% level with 0.124 positive coefficients. This showed that crisis does not affect corporate diversification strategies in the analysis period from 2007 to 2012. However control variables under the Tobin-Q model, the only size of which has a -1.1 co-efficient and a Z-value of 0.017,is significant at the 5% level. Other variables are not significant.

In conclusion, in the beginning stage of diversification, firm financial performance will have marginal increase until a certain point, further diversified will reduce the marginal profit and latest stage may even turn to losses. This is due to the inefficiency of operational costs.At the beginning of diversification, costs are lower than the benefits, and the firm showedrelative better performance. At the beginning stage, the firmis able to achieve the economies of scale and scope. However, as the degree of corporate diversification increases, the benefits will reduce the positive effectstofirm performance until a certain stagewhen diversification begins to negativelyaffect firm performance due to diseconomies of scale and scope. This curvilinear model of diversification and performance theory is supported by below scholars such as Palich, Cariniand Seaman (2000); Caper and Kotabe (2003); Qian, Li, Li, and Qian (2008) and Park and Jang (2012).

Markides (1992) and Nachum (2004) found that the curvilinear effect of corporate diversification may be due to limitations of the management team in coping with the expansion of the business. Sometimes the capabilities and the resources of the firm to manage the corporate diversification also results in the curvilinear effect of corporate diversification. The curvilinear effect may also be due to the excess of resources that are not easy to covert or transfer to other business units that need it. When the resources are not managed in an effective manner, waste will result in negative effects to firm financial performance and cause the curvilinear effect of corporate diversification.

Furthermore, to confirm the applicability of the system GMM estimation technique, the study reports robust SE GMM. Under Robust SE GMM, the entropy index (EI) with a coefficient of 10.26 and a Z-value of 2.86is significant at the 1% level and is positively correlated to firm financial performance (ROA ratio). The squared term for the entropy index (SEI), with a coefficient of -3.123 and a Z-value of -2.77,is significant at the 1% level and is negatively correlated to firm financial performance (ROA ratio). The firm financial performance measurement based on (market value) Tobin-Q also supported the result. The entropy index (EI) with a coefficient of 8.89 and a Z-value of 0.77is significant at the 10% level and is positively correlated to firm financial performance (Tobin-Q) ratio. The squared term for the entropy index (SEI), with a coefficient of -2.80 and a Z-value of -0.78,is significant at the 10% level and is negatively correlated to firm financial performance as measured by the Tobin-Q ratio. Again, the result supported Hypothesis 1.

4.3. Corporate Diversification Determinants

Corporate diversification determinants represent stage 3 of the research. In this stage, the researcher strives to identify corporate diversification determinants by focusing on the four keys of corporate diversification determinants, which are family-owned firms, government-owned firms, free cash flow and growth opportunities. These are the key determinants when firms start to engage in corporate diversification.

4.3.1. Family-owned Firm and Corporate Diversification

Many family-owned firms being test for performance, but less on diversification strategies determinants. As a result, the below hypothesis has being used for the testing of the determinants on the family-owned firm (FO) and corporate diversification (EI).

Table 4.3.1
Family–owned firm and Corporate Diversification (EI)

D.V. Corporate Diversification	SYS GMM EI Vs FO	SYS GMM Robust SE EI Vs FO
L1 EI$_{it-1}$	2.16** (0.2780602)	2.20** (0.2780602)
FCF	2.82*** (0.5651838)	2.41** (0.5651838)
GOPP	-2.67*** (-0.0294391)	-2.75*** (-0.0294391)
SIZE	0.13 (0.0028105)	0.13 (0.0028105)
CRISIS	-0.66 (-0.007012)	-0.63 (-0.007012)
CON	1.09 (0.8800801)	0.92 (0.8800801)
IND	1.83* (0.3781103)	2.07** (0.3781103)
TRAD	1.00 (.1924415)	1.07 (.1924415)

contd. table 4.3.1

D.V. Corporate Diversification	SYS GMM EI Vs FO	SYS GMM Robust SE EI Vs FO
PLANT	1.83* (0.3794184)	2.06** (0.3794184)
IM	0.68 (2.514048)	0.69 (2.514048)
CONSTR	1.14 (0.2511279)	1.69* (0.2511279)
Industry effects	Yes	Yes
Firm fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
AR(1)	-2.986***	-2.986***
AR(2)	-1.2025	-1.2025
Sargan Test	0.6063	0.6063
Observation	120	120
Instruments	22	22

Notes: The above result is for objective 3 using Models 4 to test hypothesis H4, H6 and H7 with Panel System GMM (two-step system GMM). EI is represented the Entropy Index to measure corporate diversification; the more higher the index the more widely diversified the firm is. FO is represented Family Owner's firms, FCF isrepresented Free Cash flow and GOPP isrepresented the growth opportunities of the firm. CRISIS is the control variables (Crisis)for the crisis effect represented by dummy equal = 0 (2007 -2009) for before and =1 for after. (2010 -2012). Size is a control variable that used logarithm transformed of the total assets to reduce effect on the dependant variable. CONSTR is the control variables for Construction, CON is the control variables for Consumer, IND is the control variables for Industry,TRAD is the control variables for Trading,TECH is the control variables for Technology, PLANT is the control variables for Plantation,IM is the control variables for Infrastructure. Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). T-statistics of system GMM model are based on Windmeijer-corrected standard errors.

4.3.2. *Government-owned Firm and Corporate Diversification*

To further diagnosis the diversification determinants below hypothesis used.

Table 4.3.2
Government–owned firm and Corporate Diversification (EI)

D.V. Corporate Diversification	SYS GMM EI Vs GO	SYS GMM Robust SE EI Vs GO
L1 EI$_{it-1}$	2.23** (0.2845751)	2.24** (0.2845751)
FCF	2.76*** (.8655089)	2.58*** (.8655089)
GOPP	2.66*** (-0.0293603)	2.74*** (-0.0293603)
SIZE	0.12 (0.0024197)	0.12 (0.0024197)

D.V. Corporate Diversification	SYS GMM EI Vs GO	SYS GMM Robust SE EI Vs GO
CRISIS	-0.66 (-.006931)	-0.62 (-.006931)
CON	0.81 (0.5663095)	0.77 (0.5663095)
IND	1.85* (0.381609)	2.08* (0.381609)
TRAD	1.02 (0.1955662)	1.08 (0.1955662)
PLANT	1.84* (0.3814495)	2.07** (0.3814495)
IM	-067 (-1.072932)	-0.76 (-1.072932)
CONSTR	1.15 (0.2540731)	1.69* (0.2540731)
Industry effects	Yes	Yes
Firm fixed effect	Yes	Yes
Year fixed effect	Yes	Yes
AR(1)	-3.0359***	-3.057***
AR(2)	-1.2013	-1.2018
Sargan Test	0.5971	____
Observation	880	880
Instruments	22	22

Notes: The above result is for objective 3 using Models 5 to test hypothesis H5, H6 and H7 with Panel System GMM (two-step system GMM). EI is the Entropy Index to measure corporate diversification; the more higher the index the more widely diversified the firm is. GO is represented government owner's firms, FCF is represented Free Cash flow and GOPP is represented the growth opportunities of the firm. CRISIS is the control variables (Crisis)for the crisis effect represented by dummy equal = 0 (2007 -2009) for before and =1 for after. (2010 -2012). Size is a control variable that usedlogarithm transformed of the total assets to reduce effect on the dependant variable. CONSTR is the control variables for Construction, CON is the control variables for Consumer, IND is the control variables for Industry,TRAD is the control variables for Trading,TECH is the control variables for Technology, PLANT is the control variables for Plantation,IM is the control variables for Infrastructure. Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). T-statistics of system GMM model are based on Windmeijer-corrected standard errors.

4.3.3. *Free Cash Flow Firm and Corporate Diversification*

To further diagnosis the diversification determinants, refer to Table 4.3.1 Free cash flow (FCF) and family-owned firm have a positive correlation with diversification (EI), with a positive 0.565 co-efficient and a Z-value that is positive at 2.82 and significant at the 1% level. Further testing on the robust model under system GMM robust SE also provides the same result, with a 0.565 co-efficient and a Z-value that is positive at 2.41 and significant at the 1% level. The result showed a positive correlation between free cash flow (FCF) and corporate diversification. This can be explained under the family-owned firm structure. When family-owned firms have excess funds, they will try to diversify and build their empire in the business. This is an agency issue that occurs in Malaysia.

On the other hand, refer to Table 4.3.2 Free cash flow (FCF) and government-owned firms also showed a correlation, with a positive 0.8655 co-efficient and a Z-value that is positive at 2.76 and significant at the 1% level. Further testing under Sys GMM robust SE also provides the same result, with a positive 0.8655 co-efficient and a Z-value that is positive at 2.58 and significant at the 1% level. The result showed there was a positive association between FCF and corporate diversification. The majority of government-invested projects involve huge funding, and as a result, FCF will be a vital point to consider. The main issue or whether or not an entity is able to carry out the project will depend on FCF. If a government-owned firm has access to FCF, then the company will then diversify to other sectors to help the country develop. This is very common in the energy market, where the majority depend on government to push needed economic stimuli.

4.3.4. Growth Opportunity Firm and Corporate Diversification

Growth opportunity (GOPP) has a negative correlation with diversification (EI), with a negative 0.0294 co-efficient and a Z-value that is negative at 2.67 and significant at the 1% level. System GMM robust SE also provides the same result, with a negative 0.0294 co-efficient and a Z-value that is negative at 2.75 and significant at the 1% level. The result showed a negative association between growth opportunities (GOPP) and corporate diversification. The family-owned firm's diversification strategy has a negative relationship with the company's growth opportunities. Those firms controlled by family members always have their own agenda, and the corporate diversification strategy is not their priority for profit maximization. Corporate diversification strategy is just helps the family-owned firms to expand their business units and build their family empire building or pyramidal structure and tunnelling. (A.N. Bany-Ariffin, 2010).

The result also supported Stowe and Xing's (2006) finding that growth opportunities between corporate diversified firms is not the same. They also found that diversified firms do not necessarily experience a diversification discount due to agency issues.

On the other hand, refer to Table 4.3.2. Growth opportunity (GOPP) and government-owned firms (GO) also showed a positive correlation with diversification (EI), with a negative0.0293 co-efficient and a Z-value that is positive at 2.66 and significant at the 1% level. By using the method of System GMM robust SE also provides the same result, with a negative 0.0293 co-efficient and a Z-value that is positive at 2.74 and significant at the 1% level. The result show that there is a negative association between GOPP and corporate diversification. Further, growth opportunity (GO) is negative related to diversification (EI) in government-owned firms. This supports the theory that the government needs to take care of social responsibilities first and growth opportunities second. Govern even invests in some projects with less growth opportunity in order to provide needed services to the general public.

5. CONCLUSIONAND IMPLICATIONS

This research finding contributed in an interesting way to the current literature gaps. Regarding the first research objective, the research used the new measurement of diversification by using entropy and relatedness, which better explain corporate diversification. It reflected more accurately how diversification has been accomplished in terms of degree and breadth of diversification. Conventional methods that use dummy variables are only able to identify firm diversification but cannot explain the degree of the diversification.

Thus, it provideda more accurate account of whether diversification adds value or diminishes value based on the profit contributed by each segment to the firm as a whole. The empirical findings, which showed that diversification is better than non-diversification,take into consideration the curvilinear relationship that happens along with the line of corporate diversification and firm financial performance using the entropy index and relatedness, which are able to identify the degree of each of the firms' corporate diversification. The findings supported the general arguments present in the literature and in most cases favour corporate diversification. In Malaysia,corporate diversification strategies are positivelyrelated to firm financial performance, followed by the Rumelt (1974) theory of the economies of scale and economies of scope. From a theoretical point of view, diversified firms can organize their activities internally between each division in order to develop and exploit firm-specific advantages in knowledge and products for better firm performance. Corporate diversification does provide an opportunity to take advantage of the economies of scale,enabling firms to develop and fully utilize their resources to reduce costs of production and achieve economies of scope, which in turn reduces operational costs and increases profitability.

In emerging markets such as Malaysia, support of the theory of corporate diversification brings positive financial performance for firms. When testing diversification using the entropy index versus firm performance and employing the accounting value ROA, the result showed a positive relationship with ROA. As to public perception toward corporate diversification, when tested using Tobin-Q, the result obtained was the same when compared to the finding of ROA. Corporate diversification does create value for firms. When the researcher measured firm financial performance by using market value (Tobin-Q), the result showed a positive relationship with corporate diversification strategies. This means that the general public does have a positive perception of corporate diversification strategies. They do believe that diversification strategies improve firm's financial performance. Corporate diversification strategies expose firms to a wider range of opportunities for growth, when viewed from the perspectives of the various markets.

The power of using the entropy index is that it confirmed the test results by taking into account the degree of diversification versus firm performance, which further confirmed the robustness of the relationship and closed the gap of previous scholars who were only able to test the surface of corporate diversification by using dummy variables to represent firm involvement or lack thereof in corporate diversification. The findings also explain why some scholars found that corporate diversification has a positive relationship with performance and some scholars found that corporate diversification has a negative relationship with the performance. The previous research was not able to link the degree of diversification to firm performance but was only able to test diversification or non-diversification based on dummy variables.

Thestudy showed that the relationship of free cash flow (FCF) and growth opportunities (GOPP) has a similar positive effect toward corporate diversification in government owned firm, however growth opportunities has negative effect due to agency issues. From a policy maker's perspective, corporatediversification that results from the firm's growth opportunities have a few theories behind it. First, policy makers need to understand the type of diversification that will bring growth opportunity to the firm and also social impact to the firm. Currently, social responsibility is one of the main issues that policy makers must address.Second, it is important to recognize the societal implications of corporate diversification and firm financial performance. Third, agency conflict that may happen due to excess free cash flow (FCF) must be controlled. Fourth, market sentiment must support corporate diversification in

developing countries like Malaysia. As a result, policy makers need to encourage firm diversification as they are viewed as the best strategies for firm growth.

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